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ACUTE NEPHRITIS.¹

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WITHIN the wide ambit of this subject may justly be included some diseases which I shall omit from consideration. I propose to address myself chiefly to acute glomerular nephritis, and unless otherwise indicated, I shall use the expression "acute nephritis" with this in view. Before I define acute nephritis it is first necessary to remember that all severe acute infectious diseases, such as pneumonia, typhoid fever *et cetera*, attack the cells of most viscera, causing parenchymatous degeneration and leading to the appearance in the urine of the so-called febrile cloud of albumin. This albuminuria

may be transitory; but more often it persists throughout the febrile period. It is not to be regarded as a sign of acute nephritis. Yet it affords ocular evidence of the results of toxic action upon the kidney cells, and in a sense it indicates a minor departure from the normal renal function.

Quite a different clinical significance is attached to the appearance of oliguria, gross albuminuria or hæmaturia, or both, along with cylindruria and œdema of the renal type. Without reservation, those signs and symptoms are held to be diagnostic of acute nephritis.

Attention has often been called to the possibility of acute nephritis descending so lightly upon a patient that it passes unnoticed until subsequent signs of permanent damage are revealed. This thought provokes the question as to whether there is a gradual pathological transition between the changes in the kidney responsible for febrile albuminuria and the morbid condition clearly

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on November 30, 1939.

recognized as acute nephritis. Murphy and Rastetter emphasized that mild subclinical forms of acute nephritis might exist, pass undiagnosed and untreated, and progress insidiously into the chronic stage of glomerular nephritis before it was realized that the kidneys had been irreparably damaged. This opinion can only, I feel, be based upon the frequency with which one encounters cases of chronic nephritis in patients who do not remember having suffered from acute nephritis. We have, of course, the analogy of other pathological conditions—for example, acute epidemic encephalitis, a mild abortive attack of which is very frequently followed by serious permanent damage in the brain.

One feels confident, however, that febrile albuminuria is a condition not allied to mild nephritis. L. C. Hill has recently stated that the distinctive histological feature of the kidney in febrile albuminuria is the absence of tissue reaction of an inflammatory nature and the presence of tissue changes, some of which are certainly degenerative. Most investigators will agree with this conclusion, which has certainly been our experience at the Royal Prince Alfred Hospital. It would appear, therefore, that if mild subclinical forms of acute nephritis may exist, of such a nature as to determine the gradual development of chronic glomerular nephritis, the pathological changes involved differ materially from those found in febrile albuminuria. If I have dwelt perhaps unduly upon this problem it is because my experience in consulting practice makes me deem it necessary to restate our knowledge.

The Mode of Onset.

Acute nephritis manifests itself most typically during the course of an acute infection of the throat—for example acute tonsillitis—or during scarlet fever, typhoid fever, pneumonia, rheumatic fever; acute infections of the skin, infected burns and numerous other acute infectious diseases may be complicated by acute nephritis. Towards the end of the second week of the primary illness, or a little later, the patient may complain of pain in the lumbar region and of oedema. The pain in the back is not always present. It is accompanied by tenderness on palpation over the kidneys. The oedema varies greatly in degree. It is most pronounced in those parts of the subcutaneous tissue where the areolar tissue is loosest. It nearly always affects the face, and particularly the eyelids. There may be just a puffiness of the eyelids; but on the other hand the eyes may be closed by extensive oedema of the eyelids. The cheeks, lips, soft palate and even the larynx may be affected. One sees oedema also in the skin and subcutaneous tissue of the limbs, causing a semitransparency of the hands, for instance, and a polished skin on the lower limbs. Similarly, in severe cases free fluid occurs in the pleural and abdominal cavities, and localized areas of oedema occur in the brain. This oedema of the brain is held responsible for the uræmic symptoms of acute nephritis, such as headache, anorexia, vomiting, convulsions and coma.

It is accompanied by papillitis. The urine may be smoky or red. Actual anuria is uncommon and, when noted, generally disappears after twenty-four hours. There is much albumin in the urine, but the urea and chloride content is diminished and the urinary deposit contains blood cells and numerous blood and cellular casts.

The Course of the Disease.

The course of the disease varies considerably. In the milder cases the oedema is slight and passes off within a week. It is always noted that the face is pale and pasty, and may be even waxy in appearance for a period varying from days to weeks. Similarly, the urine improves rapidly in the milder cases. Macroscopic blood disappears after a few days. The amount of urine excreted increases from a few ounces on the first day to 20 to 30 ounces within a week; the albumin varies considerably in quantity, but tends to diminish. Similarly, the blood cells and casts become fewer. In all cases, severe or mild, the signs are at first explosive, but sooner or later abate to a stage of stabilization, which may persist. In this stage the urine is still abnormal, containing albumin and casts. In cases of moderate severity the urine may return to normal after a period of from four to twelve weeks.

Earlier writers emphasized the connexion between oliguria and oedema. It is necessary to point out, however, that whilst it is natural that the urine should be excreted in diminished quantities when fluid is retained, yet many patients with acute nephritis who are scarcely oedematous at all suffer from pronounced suppression of urine. This will be readily understood when I come to discuss the histological changes in the kidney.

Important physical changes occur quite early in the cardio-vascular system. The pulse is hard, because of hypertension. This leads to a moderate elevation of the systolic and diastolic blood pressure. The degree of elevation is not so great as in the chronic stages of nephritis. A blood pressure of from 160 to 180 millimetres of mercury during systole and of 100 millimetres of mercury during diastole is common. This sign may not persist for more than a few days, and indeed may be so transitory as to be overlooked. It is necessary, therefore, to seek it by repeated examinations if one is to be sure of the presence of this important diagnostic sign of acute nephritis.

Naturally, a persistent hypertension will be accompanied by hypertrophy of the heart. Other changes found in the heart are more difficult to explain. Dilatation of the heart, with or without acute congestive failure, undoubtedly occurs, sometimes in the first week of the illness, even before the appearance of the typical urinary changes. It cannot be the result of the moderate degree of hypertension which has existed for so short a time. Master, Jaffe and Dack examined twenty-four cases of acute nephritis with heart involvement, and confirmed Baehr's findings that symptoms of heart failure often occurred early in the course of acute glomerular nephritis before extensive renal damage

had occurred. The failure affected the left ventricle and was responsible for dyspnoea, cyanosis and pulmonary oedema. They asserted that the heart failure resulted from vascular and not from renal damage; and they concluded that acute glomerular nephritis was a systemic vascular disease in which the heart might be seriously impaired. They used the electrocardiograph to show that true myocardial degeneration occurred, for they found inverted *T* waves and sometimes prolonged auriculo-ventricular conduction times. They suggested that at least in some cases of cardiac dilatation, oedema of the heart muscle along with hypertension was responsible.

The changes in the eyes, so familiar in chronic nephritis, are not a feature of the acute disease. One finds papillitis at times, and the so-called uræmic amaurosis. In the acute nephritis of pregnancy, retrobulbar neuritis leading to optic atrophy has been described. The presence of albuminuric retinitis in a patient with acute nephritis is generally held to indicate that the patient is not having his first attack of nephritis, but rather an acute exacerbation superimposed upon chronic nephritis.

Pathological Changes in the Kidneys.

It is convenient at this stage to discuss the pathological changes which occur in the kidneys. These may be simply described. Macroscopically the organ is enlarged and oedematous. When the capsule is cut, the cortex bulges through the cut portion. All grades of colour changes have been found, from the red kidney which drips blood to one which is pale grey. Isolated hæmorrhages may be noted. It is readily seen that the cortex is more swollen than the medulla, and that the glomeruli are conspicuous as red or grey dots. Histologically the glomeruli appear to have borne the brunt of the disease. Boyd states that the fundamental changes are proliferation, exudation and degeneration. He holds that there are three great changes in the glomerular tuft, namely, proliferation of the epithelium of the tuft and of the endothelium of the capillaries, and the formation of an intracapillary mass of hyaline fibres. The most important of these changes is the occlusion of the capillaries of the tufts by proliferation of the endothelium and by the formation of hyaline fibres. Thus the glomerulus may become bloodless—a change exerting great influence upon the nutrition of the tubules and upon the systemic blood pressure. At the same time the epithelium over the tuft proliferates and fills up the spaces between the loops and desquamates into the capsule. The capsule itself becomes the seat of exudation and hæmorrhage; and the cells lining the capsule proliferate. In later stages the exudate is replaced by epithelial cells, which tend to be arranged in the form of a crescent on one side of the capsule. The tubules are dilated. Their lumen is often occupied in part by degenerated epithelial cells, and of course hæmorrhages frequently occur into them.

Whilst all parts of the kidney, even the medulla, share in the inflammatory changes, it is in the

glomeruli that the chief and the characteristic changes are to be sought. The alteration in the urinary constituents, however, does not depend upon the number of glomeruli involved. In the severest manifestations of acute nephritis many glomeruli are completely blocked and functionless, excreting no urine. This description refers to a typical severe case of acute glomerular nephritis, and is largely taken from Boyd's book "The Pathology of Internal Disease" as well as from *post mortem* records of the Royal Prince Alfred Hospital.

One can only conclude that similar less extensive disease is the basis of milder manifestations of acute nephritis.

The Types of Acute Nephritis.

O'Hare describes two types of acute nephritis, one essentially oedematous and the other essentially hæmorrhagic. The oedematous type is that with which we are all familiar. His hæmorrhagic nephritis is a type in which the patient mostly survives the acute attack, and therefore he is unable to give a convincing account of any essential pathological change or to state whether there is any variation of the commonly accepted picture of glomerular nephritis. But he attaches great importance to it as a frequent cause of chronic nephritis. In the early stages it differs from the commoner form of acute nephritis only in the urinary deposit. He attaches importance to the presence of brown granular casts and casts filled with red blood cells. He admits that it is recognized with difficulty before it drifts into a subacute stage characterized by albuminuria and the presence in the urinary deposit of red blood cells and blood cell casts and hyaline casts.

I feel by no means convinced that there is any justification for separating this type from the oedematous type, especially as O'Hare admits that oedema may be present in the hæmorrhagic type. We are on surer grounds, however, in our recognition of the benign type of acute nephritis, which is now called focal nephritis. Baehr reported his study of 14 cases in 1926. He attributes to Scheidemandal and Volhard the credit for first drawing serious attention to focal nephritis. According to Baehr it occurs mostly in young adults, and is characterized by hæmaturia, usually macroscopic, and the absence of constitutional symptoms. It may be painless. The hæmaturia may be persistent or recurrent. In most cases a definite focus of infection may be discovered, generally in the tonsil. Baehr states that many cases are at first regarded incorrectly as of surgical hæmaturia. He surmises that patients formerly regarded as sufferers from essential hæmaturia may in reality have been victims of focal nephritis. In the recurrent type the hæmaturia lasts a few days and recurs at intervals of weeks, months or years. The persistent type sets in insidiously. The hæmaturia is discovered accidentally. In both types the urine contains blood, albumin (from a little to a lot in varying amounts) and all types of casts. The total quantity of urine is not diminished. The blood

pressure remains normal and there is not the slightest increase of nitrogenous bodies. All tests for renal function give normal results. The hæmaturia has been found to be bilateral in patients who have been examined by ureteral catheterization. There is no œdema—in fact, the presence of the slightest œdema negatives a diagnosis of focal nephritis. The prognosis is excellent. Recovery is complete after each attack, and the patients do not drift into a state of chronic nephritis. Of two patients suffering from focal nephritis whom I recently treated, one had chronic suppurative *otitis media* and the other acute tonsillitis. The underlying pathological change is a glomerular nephritis confined to a few glomeruli only.

Ætiology.

Bearing in mind the gross inflammatory reaction occurring in the kidneys in acute nephritis, both general and focal, we are now in a position to discuss ætiology. It is generally admitted that acute nephritis is associated with infections of the throat and of the upper portion of the respiratory tract. Furthermore, as I have mentioned, it is occasionally associated with some severe acute infectious disease or with an acute infection of the skin. Undoubtedly infection plays a prominent and essential part in the causation of this disease, although certain predisposing causes, such as exposure to cold, have been assigned an ætiological role by the older writers upon the subject. Yet we do not know whether infection acts by bacterial invasion of the kidney or by a chemical poisoning with bacterial toxins.

The nature of the inflammatory changes and the explosive nature of the onset of symptoms combine to render either explanation unsatisfactory. Moreover, the theory of bacterial invasion is questionable, because the presence of bacteria in the kidney cells has not been consistently demonstrated. It is true that occasionally an experimental acute nephritis has been produced at times by the injection of organisms into the renal artery; but even this result is an exception rather than a rule. Again, nephritis does not occur at the height of throat infections, but after a definite delay of two weeks or more. It is becoming fashionable of late to introduce allergy into our calculations as to how acute nephritis is really caused.

In 1937 McCann reviewed recent literature upon the ætiology of nephritis, with special reference to the experiments with cytotoxic serum. Ahlstrom found that Dick toxin, when injected into the renal arteries of normal rabbits and of rabbits previously sensitized to Dick toxin, produced only a few focal degenerative patches. Most of the sensitized animals showed merely a few perivascular cellular infiltrations, particularly around the afferent glomerular arteriole. But when rabbits sensitized to horse serum were given preliminary injections of staphylococci, subsequent injections of serum caused intracapillary reactions in the glomeruli (and these intracapillary reactions, you will remember, are amongst the characteristic changes seen in acute

glomerular nephritis). Ahlstrom concluded that in order to produce glomerular nephritis experimentally it was necessary to have an allergic factor and an organ predisposing factor. Smadel found that pure nephrotoxic effects consisted of proteinuria, cylindruria, azotæmia and anasarca, but not hæmaturia. Hæmaturia and associated glomerular changes occurred only when anaphylactoid factors were present. In the present state of our knowledge it must be confessed that we really do not yet know how acute nephritis results from bacterial infection.

The Changes in the Blood.

The changes in the blood in acute nephritis must here be briefly referred to. There is some degree of secondary anæmia, directly proportional to the severity and persistence of the attack. The amount of urea and creatinine is increased in the circulating blood. In œdematous patients the cholesterol content is increased in proportion to the œdema. Maxwell states that during the recovery stage the œdema clears up before the cholesterol reaches the normal level. He considers that if the cholesterol persists above normal level after the œdema has disappeared, the onset of uræmia must be looked for. When, however, uræmia develops, the cholesterol level usually falls to normal.

Complications.

The chief complications of acute nephritis are secondary infections, such as pericarditis and pleurisy, pulmonary and laryngeal œdema and uræmia. I do not propose to go into the vexed problem of the causation of uræmia. It is rare in adult nephritis of the acute variety, but common in children. It may manifest itself as headache, convulsions and coma. I have already referred to the amaurosis which sometimes follows uræmia.

The Differential Diagnosis.

The differential diagnosis of acute nephritis is not difficult. The disease must be distinguished from acute chemical poisoning, venous congestion, embolism, and in fact from most causes of renal hæmorrhage. Having determined that nephritis exists, one's next duty is to determine whether the benign or more serious form of nephritis is present. Murphy and Rastetter consider that a glomerular nephritis may be diagnosed if albuminuria, hæmaturia and cylindruria exist for one week, even if extrarenal vascular phenomena are missing. Loeb requires the existence of these phenomena for fourteen days, and considers the diagnosis doubtful if the vascular changes are not found. Baehr's view is similar, for he holds that acute glomerular nephritis is part of a generalized vascular disease and cannot be diagnosed by urinary changes alone. My own experience has led me to agree with Murphy and Rastetter, and I should not hesitate to diagnose acute nephritis if the characteristic urinary changes were present for one week. This would enable us to exclude embolism, which might produce urinary phenomena simulating those of nephritis for a few

days only. Of course, if œdema of the renal type is present along with the urinary changes, one does not need to wait even for one week to elapse before making up one's mind.

Treatment.

The aim of treatment in acute nephritis is to protect the kidneys from damage by resting them and to relieve symptoms. The consideration shown to the kidneys must of necessity be varied with the functional efficiency of these organs.

In the first week of the disease, when impairment of renal function is great, food is withheld to a large extent. Probably it is wise to give neither food nor fluid so long as anuria exists. Otherwise, for the first three days I administer fruit juices and glucose. For instance, 10 ounces of a 20% glucose solution flavoured with fruit juices may be offered to the patient every four hours. For the remainder of the first week one pint of milk (20 grammes of protein) and one pint of fruit juice may be given daily. In the second week of illness, if the patient's kidneys are recovering their function, the equivalent of two pints of milk (40 grammes of protein) fortified by lactose and cream, or with the addition of glucose in fruit juice, will prove adequate. Thereafter a light diet containing 60 grammes of protein may be given as kidney function approximates the normal. When the kidneys have finally regained full efficiency a normal diet may be allowed, irrespective of the presence of albuminuria. Salt is not allowed whilst any œdema remains. The patient is nursed in bed until kidney function is restored and hæmaturia ceases. It was customary in the old days to nurse the patient between blankets, as sweating and hot packs occupied a prominent part in the régime. This form of therapy has been largely abandoned, as have the violent purging and the full milk diet which were a feature of hospital treatment in my student days. The old-fashioned administration of three pints of milk per day from the beginning of the illness offered the kidneys too much fluid and protein to dispose of.

The treatment of uræmia is more successful as a rule in acute nephritis than in the chronic disease. The so-called uræmia of acute nephritis is generally held to be associated with encephalopathy and œdema of the brain rather than with chemical poisoning of the brain cells. Consequently our measures are directed towards the reduction of intracranial tension. The removal of 20 to 40 cubic centimetres of cerebro-spinal fluid is recommended, with the foot of the bed raised. This ensures slow drainage and lessens the risk of formation of a pressure cone. An alternative method is to remove 10 to 20 ounces of blood by venesection, and to inject intravenously the same amount of 10% magnesium sulphate solution. Drugs are of little value in the treatment of acute nephritis. Diuretics are definitely forbidden, with the exception of alkalis, such as potassium citrate. The bowels should be kept open daily by mild aperients. Should complete suppression of urine occur, the intravenous injection

of 4.285% sodium sulphate and 10% glucose in normal saline solution has been recommended by Cruickshank.

Bibliography.

- F. D. Murphy and J. W. Rastetter: "Acute Glomerulonephritis, with Special Reference to Course and Prognosis", *The Journal of the American Medical Association*, Volume III, August 20, 1938, page 8.
 A. M. Master, H. L. Jaffe and S. Dack: "The Heart in Acute Nephritis", *Archives of Internal Medicine*, Volume LX, December, 1937, page 1016.
 G. Baehr: "A Benign and Curable form of Hemorrhagic Nephritis", *The Journal of the American Medical Association*, Volume LXXXVI, April 3, 1926, page 1001.
 W. S. McCann: "Bright's Disease: A Review of Recent Literature", *Archives of Internal Medicine*, Volume LX, July, 1937, page 167.

HÆMOLYTIC STREPTOCOCCAL INFECTIONS FOLLOWING CHILDBIRTH AND ABORTION. II: CLINICAL FEATURES, WITH SPECIAL REFERENCE TO INFECTIONS DUE TO STREPTOCOCCI OF GROUPS OTHER THAN A.

By ARTHUR M. HILL and HILDRED M. BUTLER.

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LANCEFIELD AND HARE⁽¹⁾ (1935) were the first to apply Lancefield's group precipitin test to a large number of strains of hæmolytic streptococci isolated from cases of puerperal sepsis. From this study they concluded that Group A streptococci were responsible for almost all cases of severe hæmolytic streptococcal infection, and that such streptococci, if present in the vagina *post partum*, almost always gave rise to serious puerperal infection.

Eden and Holland⁽²⁾ (1937) referred to Group A hæmolytic streptococci as "the only ones capable of causing severe invasive infections in the human species". Miles Phillips⁽³⁾ wrote similarly in 1938. In the 1939 edition of "Queen Charlotte's Text-Book of Obstetrics"⁽⁴⁾ it is stated that "streptococci belonging to Group A are practically the only ones capable of causing severe invasive infections in human beings".

It is the purpose of this paper to report a series of hæmolytic streptococcal infections following childbirth and abortion in which infections due to streptococci of groups other than A assumed considerable importance, and in which, in addition, the majority of the women infected with Group A strains were not seriously ill.

Material Studied.

Since June, 1937, at the Women's Hospital, Melbourne, vaginal cultures have been made as a routine measure from patients in the puerperium and after abortion when the temperature rose to 101° F. To the end of January, 1939, 864 such cases were investigated, and in 108 of these hæmolytic streptococci were grown from the vaginal swab. During this period there also occurred a fatal puerperal infection due to a hæmolytic streptococcus, in which the infecting organism was

not detected in the vaginal cultures, and one case of peritonitis after abortion in which cultures from the vagina were not made. This paper deals with these 110 cases.

Lancefield Grouping.

The hæmolytic streptococci isolated from these cases were grouped according to Fuller's⁽⁵⁾ modification of Lancefield's precipitin test. Eighty-two patients were infected with Group A strains, 12 with Group B, 10 with Group C and 6 with Group G.

Clinical Severity.

Irrespective of the group to which the infecting strain belonged, we have classified the infections as mild, moderately severe, or severe, according to the general clinical condition of the patient. In this classification reference is not made to the degree of invasion as expressed in such lesions as salpingitis, pelvic peritonitis, cellulitis, thrombophlebitis and metastatic infection.

Mild Infections.

Except for perhaps a period of a few hours the women with mild infections did not look ill and their condition did not at any time cause anxiety. High pyrexia (up to 103° F. or more) or pronounced tachycardia (a heart rate up to 120 per minute or more), or both, was not uncommon as an isolated event, and might even be repeated, but was never sustained. The pulse rate lay more often below 100 than above it, and the majority of patients were afebrile within one week. In a few cases in which tachycardia and pyrexia persisted up to 14 days the degree of each was so low that it precluded their consideration as other than mild infections.

Moderately Severe Infections.

In the moderately severe infections the patients were more severely ill. The pulse rate tended to lie between 100 and 116 per minute, with exacerbations to 120 and 130; and this, combined with a higher temperature (101° to 104° F.) over some days, produced a graver clinical picture. Although most became afebrile within two weeks, these patients frequently felt ill and practically all at some stage looked ill.

Severe Infections.

The group of severe infections included all fatal cases and those in which the severity and duration of the infection gave anxiety as to the ultimate outcome. The pulse rate tended to remain above 110 per minute, commonly reaching 130 to 140 or even higher. The temperature, more often of the remittent than the intermittent variety, tended to remain above 101° F., reaching peaks of 104° to 105° F., usually at night. In those cases in which recovery occurred, it was only after a grave illness lasting from six to twelve weeks.

Group A Infections.

Eighty-two patients were infected with *Streptococcus hæmolyticus*, Group A: 66 were puerperal and 16 abortional. In 81 cases the organisms were

cultivated from the vagina, and in eight of these also from the blood. In one fatal case the streptococci were grown only from the peritoneal cavity; in this instance cultures were not made from either the vagina or the blood.

Fifty-seven cases were mild, 14 moderately severe and 11 severe. Three puerperal patients and three who had aborted died, three from general peritonitis (two puerperal and one abortional).

The mild Group A infections were usually due to uncapsulated strains, whereas the more severe cases resulted from infection with capsulated variants. The strains from mild cases also differed in their growth characteristics from those associated with severe infections. This aspect of Group A infections was discussed in a previous paper (Butler and Hill,⁽⁶⁾ 1940).

The outstanding feature of the Group A infections was the high proportion of mild cases. This finding contrasts with the statement of Lancefield and Hare that the presence of Group A streptococci in the vagina "almost always" means a serious infection.

The high proportion of mild infections was not due to the administration of sulphanilamide. In only seven of the mild cases was this drug used.

In not one of the mild cases did we detect evidence of extrauterine spread. Routine pelvic examination, however, was not carried out, for we regard this as usually unnecessary and possibly dangerous in the first week of a puerperal infection. In the absence of such examination mild transient extrauterine extension might have been missed.

In moderately severe cases extrauterine spread was seen in pelvic cellulitis, salpingo-oophoritis and pelvic peritonitis. This group also included one case of suppurative arthritis in which general and local signs were so slight that we could not regard the infection as severe. In two of the cases streptococci were grown from the blood.

In the severe group extrauterine extension was more pronounced, and in addition to the lesions of the moderately severe cases there were present osteitis and periostitis, pleural empyema and general peritonitis. In six cases of this group the streptococci were cultured from the blood.

In the whole series no relationship was evident between the quantity or quality of the lochia and the severity of the infection.

One patient only, with a mild infection, had a scarlatiniform rash.

Sulphanilamide therapy was employed in slightly less than one-third of the Group A infections. In those in which it was given early, in sufficient dosage and over an adequate period, it proved of value.

It is still commonly held that the time of onset of puerperal fever is of prognostic value; that in general, the earlier the onset, the more severe will be the disease.⁽²⁾⁽⁴⁾ We think that in regard to Group A infections at least, too much significance should not be attached to this viewpoint. Although

most severe infections begin by the end of the third puerperal day the same is true of a large proportion of mild cases. In 31 of our 45 mild puerperal cases fever began during this period (three during labour, seven on the first puerperal day, seven on the second puerperal day, and 14 on the third).

Infections Due to Streptococci of Groups other than A.

There were 28 infections due to streptococci of groups other than A. This is a higher percentage than that recorded by other writers. Colebrook and others^{(7) (8) (9)} (1936-1937) observed 11 such infections in a series of 170 cases of hæmolytic streptococcal infection. Hare⁽¹⁰⁾ (1937) reported nine in a total of 206. But in no series yet published has the period covered been sufficient to establish the true frequency of these infections. We would simply emphasize that infections due to streptococci of groups other than A do occur, and that such infections can be severe.

Group B Infections.

Twelve patients were infected with a streptococcus of Group B: nine were puerperal and three abortional. One puerperal and all three patients

who had aborted died. Of the remaining infections, one was moderately severe and seven were mild.

In two cases the streptococci were obtained both from the blood and from the vagina, in one from the blood and pleural fluid, and in the remaining nine from the vagina only. Although it is known that Group B streptococci may be present in the vagina without causing infection, we consider that in these nine cases in which a streptococcus of Group B was isolated from the vagina only, there was undoubtedly an infection due to these organisms. First, these streptococci were obtained in pure or almost pure culture from the vaginal swab, and secondly, no other pathogenic organisms were isolated from these patients.

Mild cases in this group did not differ clinically from mild infections due to Group A streptococci. General details are given in Table I. Notes on the fatal cases follow.

CASE I.—C.M., aged twenty-nine years, pregnant for the fifth time, delivered herself spontaneously at the thirty-second week of pregnancy; *post partum* hæmorrhage was followed by manual removal of an adherent placenta. Mild fever for three days *post partum* was treated with "Prontosil" in a dosage not stated; the lochia were scanty.

Fever recurred on the tenth day, with rigors twenty-four hours later. Thereafter rigors, sweats and fever to 104° F.

TABLE I.
Group B Infections.

Name.	Abortional or Puerperal.	Parity.	Severity of Infection.	Day of Onset of Pyrexia after Delivery or Interference.	Duration of Pyrexia.	Sulphanilamide Therapy.	Source of Cultures.	Result.
McD—i ..	Puerperal.	5th	Severe.	1st.	32 days.	Intermittent only.	Blood, pleural fluid.	Died.
M—e ..	Abortal.	8th	Severe.	? 1st.	15 days.	From 3rd day.	Blood, vagina.	Died.
L—d ..	Abortal.	1st	Severe.	Unknown.	6 days after admission to hospital.	After admission to hospital.	Blood, vagina.	Died.
McM—n ..	Abortal.	1st	Severe.	Unknown.	16 days after admission to hospital.	—	Vagina.	Died.
W—e ..	Puerperal.	3rd	Moderately severe.	1st.	12 days.	From 1st to 6th day.	Vagina.	Recovered.
W—n ..	Puerperal.	1st	Mild.	4th.	7 days.	—	Vagina.	Recovered.
F—d ..	Puerperal.	15th	Mild.	4th.	5 days.	From 6th day.	Vagina.	Recovered.
G—e ..	Puerperal.	1st	Mild.	4th.	2 days.	—	Vagina.	Recovered.
H—t ..	Puerperal.	1st	Mild.	1st.	3 days.	From 2nd day.	Vagina.	Recovered.
M—e ..	Puerperal.	1st	Mild.	1st.	13 days.	From 10th day.	Vagina.	Recovered.
B—t ..	Puerperal.	1st	Mild.	6th.	5 days.	—	Vagina.	Recovered.
A—e ..	Puerperal.	5th	Mild.	7th.	3 days.	3rd day only.	Vagina.	Recovered..

occurred at regular intervals of about eighteen hours; the lochia became offensive and purulent. Streptococcal anti-serum and intrauterine irrigations of glycerine were given.

The patient was admitted to hospital on the fifteenth day. She was pale and had dry lips, a furred brown tongue, and *pyorrhæa alveolaris*. The pulse rate was 134 per minute, the evening temperature 105° F. The heart and lungs were clear. The abdomen was slightly distended and not tender. The uterus was well involuted and anteverted, and the left ovary was enlarged and tender; the lochia were serous and brown. There was slight oedema of the ankles. From the vaginal swab *Bacillus coli* only was grown; no organisms were cultivated from the blood.

From the fifteenth to the twenty-fifth day severe daily rigors and sweats occurred, chiefly after noon, and subsequently became less frequent. The pulse rate was usually above 110 per minute, with exacerbations to between 130 and 160; fever was from 101° F. to 104° F. daily. During the patient's 19 days in hospital, morning intermissions of temperature occurred on six occasions; in this the temperature resembled that of an anaerobic streptococcal infection. But on no occasion were such organisms present in the cultures made from either the vagina or the blood. On the twenty-first day there was pain in the left shoulder, for which no cause was discovered.

From a blood culture made on the twenty-third day *Streptococcus hemolyticus* Group B was obtained; and sulphanilamide therapy was reinstituted, the dosage being seven grammes a day.

On the twenty-fourth day the lochia were foul and profuse, and the uterus was irrigated with glycerine twice in the next twenty-four hours.

On the twenty-seventh day there were signs at the base of the left lung, and six ounces of seropurulent fluid were aspirated, culture of which showed a growth of *Streptococcus hemolyticus* Group B. Similar streptococci were again cultivated from the blood on that date.

The patient's hemoglobin value was now 45% (Sahli), and a transfusion of whole blood was given.

On the thirtieth day six ounces of clear blood-stained fluid were withdrawn from the left pleural cavity. The patient was gravely ill; her legs were oedematous and her hemoglobin value was 50% (Sahli).

On the thirty-third day another six ounces of deeply blood-stained fluid were aspirated. That evening the patient died. Autopsy was disallowed.

Clinically this case closely resembled the first of three fatal Group B infections reported by Fry⁽¹¹⁾ in 1938, which he then stated was quite unlike any other case of puerperal sepsis which he had seen in the past six years.

Fry's case was that of a *primipara*, aged twenty-nine years, who was delivered of twins at the thirty-sixth week. Fever began on the third day *post partum*. On the sixth day the patient complained of pain in the left shoulder, and on the thirteenth day of pain in the right side of the chest on breathing. On the thirtieth day a small amount of foul-smelling pus, on the following day 12 ounces, and on the thirty-third day 46 ounces were withdrawn from the left pleural cavity. The patient died on the thirty-fourth day. Cultures from the vagina on the sixth day and from the chest on the thirtieth day showed *Streptococcus hemolyticus* Group B; no organisms were cultivated from the blood. The striking and uncommon features at autopsy were subphrenic and multiple liver abscesses containing thick pus, and the pleural effusion with thick layers of fibrin firmly adherent to the pleural surface.

Fry pointed out the contrast between this picture and that of Group A infections, with their absence of localized abscess formation and their deposition of fibrin on the serous surfaces in smooth thin

plaques, which peeled easily to leave a smooth surface.

The clinical parallelism between Fry's case and ours is close. In each the labour was premature (by four weeks in Fry's, by eight weeks in ours); in each a purulent effusion developed in the left pleural cavity, to be discovered at the end of the fourth week, and in each the infection was lethal in just under five weeks.

CASE II.—M.M., aged thirty-three years, pregnant for the eighth time, with a history of rheumatic fever and chorea as a child, had last menstruated four months previously. She had been syringing vaginally each day for two weeks in attempts to produce an abortion. After syringing, twenty hours before her admission to hospital, "the waters had broken" and four hours later vaginal bleeding set in, accompanied by shivers and sweats.

On admission to hospital she was pale, with a temperature of 97° F.; her pulse rate was 118 per minute, and a gallop rhythm was detected at the cardiac apex. The abdomen was soft and not tender; the uterine fundus was palpable just above the *symphysis pubis*, and pressure expressed placental tissue from the vagina. The cervix was soft and open, and placental tissue was palpable; the fornices were normal.

Blunt curettage was performed six hours after her admission to hospital, and mild fever developed twelve hours later.

On the third day after her admission vaginal cultures yielded *Streptococcus hemolyticus* Group B in pure culture. The next day the patient had shivers, sweats, headache, fever to 104° F., and an offensive vaginal discharge; blood cultures showed a streptococcus of Group B.

The subsequent course was typically septicæmic, with tachycardia and remittent fever between 100° and 104° F. Sulphanilamide (four grammes daily) was given. Once only, on the seventh day, some hours after a rigor, the temperature fell below normal. Blood cultures made on the sixth and eleventh day showed 400 and 90 colonies respectively of streptococci from one cubic centimetre of blood.

On the eleventh day the heart again had a gallop rhythm. A dirty sloughing ulcer was present on the vulva, and vaginal cultures still grew *Streptococcus hemolyticus* Group B. The hemoglobin value was now 60% (Sahli).

On the thirteenth day there was a pronounced systolic bruit at the cardiac apex; the patient was gravely ill, feverish, and complained of pain in the right shoulder.

On the fifteenth day, some hours after a blood transfusion, she died.

Post mortem examination revealed acute infective endocarditis of the mitral valve. The aortic and mitral valves were thickened, and soft friable vegetations were present on the mitral cusps.

The lungs were oedematous and the pleural cavities contained serous fluid. The liver was friable and the spleen was large and soft. The kidneys were granular, with adherent capsules. The uterine cavity was two and a half inches long, and soft debris covered the placental site at the fundus. There was no lesion of the brain. Group B streptococci in pure culture were obtained from the cardiac vegetations, the pleural cavity and the placental site.

CASE III.—J.L., aged twenty-one years, *primigravida*, had induced an abortion with "herbs and a hot bath" four weeks before her admission to hospital, when between ten and twelve weeks pregnant. For three weeks malaise kept her "in and out of bed", and for one week before her admission to hospital she was ill, feverish, and was said to be delirious daily.

On admission to hospital she was extremely ill, delirious, and breathing rapidly. Her pulse rate was 150 per minute, her temperature 101.6° F. No abnormality of the heart

and lungs was detected. The abdomen was soft. The uterus was enlarged, soft and retroverted, with a patulous cervix; the left fornix was full and tender. The vaginal discharge was brown, mucoid and offensive. Sulphanilamide (five grammes daily) was given.

Blood cultures made on the day of her admission to hospital yielded a streptococcus of Group B. Vaginal cultures were made on the second and third days after her admission to hospital. The first culture yielded *Bacillus coli* only, but the second showed a few colonies of a streptococcus of Group B in addition to *Bacillus coli*. A blood culture made on the third day showed 160 colonies of streptococcus of Group B from one cubic centimetre of blood.

The patient's condition did not improve. She remained seriously ill, mentally confused and irrational, with a rapid, weak pulse and occasional cyanosis. On the sixth day after her admission to hospital she died.

Post mortem examination revealed acute infective endocarditis of the mitral valve. A large mass of rough, friable vegetations involved the mitral cusps. The lungs were oedematous. The liver was friable. The spleen was greatly enlarged and softened and contained a large septic infarct near the surface. The kidneys were swollen and contained a few infarcts in their substance. The uterine cavity was two and a half inches in length, and pus covered the inflamed placental site at the fundus. There was no lesion of the brain.

Cases II and III resembled in their clinical course and autopsy findings the last two of Fry's⁽¹¹⁾ three fatal Group B infections, to which we have already referred. Whereas Fry's cases were puerperal, these infections were associated with abortion.

What is the portal of entry in these fatal Group B infections? We would suggest that, although the evidence is not complete, a genital origin is most likely.

In our first case mechanical interference, in the form of manual removal of the placenta, indicated the possibility of such an infection. Group B streptococci, however, were not obtained from the vaginal swab; but as the cultures were not made until the fifteenth puerperal day the initial infection might have subsided. This case very closely resembled Fry's first case, in which the streptococci were cultivated from the vagina; but in Fry's case the cultures were made on the sixth day.

In our second case mechanical interference took the form of repeated vaginal douching, and the bacteriological evidence of a genital origin was indisputable. The same organism was grown twice from the vagina, three times from the blood, and at autopsy from the placental site, pleural fluid and cardiac vegetations. In this case the first vaginal culture was made four days after the patient had induced an abortion, and resulted in a pure culture of streptococcus Group B, whereas a similar culture made eight days later showed only a few streptococci.

In our third case evidence of mechanical interference was equivocal; but the bacteriological findings suggested a genital origin. Only a few streptococci were cultivated from the vagina, but the cultures were not made until four weeks after the patient had aborted.

In Fry's two cases of puerperal infective endocarditis the streptococci were not obtained from the vaginal cultures made on the patient's admission

to hospital, and for this reason Fry considered a genital origin unlikely. In these two cases, however, the first vaginal cultures were not made until the seventeenth and eighteen puerperal days respectively, by which time, as we have already suggested, the initial genital infection might have subsided. For this reason we do not agree with Fry in regarding the absence of streptococci from vaginal cultures as evidence against a genital origin. When we consider Fry's and our cases together, we find that in the two infections investigated before the end of the first week a heavy growth of streptococcus Group B was obtained from the vaginal swab, whereas in the vaginal cultures made during subsequent weeks, both in one of these and in the four remaining cases, the streptococci were fewer or absent.

CASE IV.—V.McM., after two months of increasing jaundice, had a therapeutic abortion successfully induced with rectal tubes at the fifth month of pregnancy. One month later she was admitted to hospital with the diagnosis of acute yellow atrophy of the liver. She was deeply jaundiced and looked ill; her pulse rate was 80 per minute, her temperature was 98° F., and her haemoglobin value was 65% (Sahl). Three days after her admission to hospital her temperature rose to 100.4° F., and by the fifth day it was 104.2° F.; her pulse rate was 144 per minute. She thereafter remained febrile, with tachycardia to 120 per minute, until the nineteenth day, when she died. Autopsy was disallowed. A few colonies of streptococcus Group B were obtained from the vaginal swab on the fourteenth day, and a heavy growth of these organisms was obtained on the sixteenth day; but no streptococci were cultivated from the blood on the same dates.

We regard this infection as a terminal event in a grave toxæmia of pregnancy. As Group B streptococci were the only pathogenic organisms recovered from this patient, it seems likely that they were the cause of her fever; but we make no further claims as to the significance of this infection.

Group C Infections.

There were 10 patients infected with *Streptococcus hemolyticus* Group C (see Table II). Nine were puerperal, and all but one had mild infections. The exception was a moderately severe puerperal case, in which fever persisted for seventeen days, with low-grade bronchopneumonia of the base of the left lung. Cultures of the sputum were not made, and the nature of the bronchopneumonia is not known.

There were no distinctive clinical features of Group C infections. One patient received sulphanilamide.

This small series does not reveal the possibility of Group C streptococci causing a serious infection. But that the possibility exists is seen in a case admitted to hospital in August, 1936. At this time bacteriological facilities for the proper investigation of these cases did not obtain; for this reason only the results of blood cultures can be recorded.

A.B., aged thirty-three years, pregnant for the ninth time, was delivered at the fortieth week, after thirty-two hours' labour, of a baby weighing eleven and a half pounds. Numerous vaginal examinations were made during labour.

TABLE II.
Group C Infections.

Name.	Severity of Infection.	Day of Onset of Pyrexia after Delivery or Interference.	Duration of Pyrexia in Days.	Remarks.
F-n ..	Moderately ill.	2nd	17	Onset with low-grade bronchopneumonia base of left lung. No cultures of sputum made.
P-n ..	Mild.	3rd	4	—
C-ri ..	Mild.	3rd	9	Lochia foul.
B-s ..	Mild.	4th	5	Post-partum hemorrhage. Manual removal of placenta.
C-ll	Mild.	Unknown; admitted 11th day.	Three days after admission.	—
W-e	Mild.	2nd	5	—
F-r ..	Mild.	4th	2	Episiotomy.
D-r	Mild.	6th	4	Vaginal laceration.
M-t ..	Mild.	4th	3	—
P-c ..	Mild.	1st (followed curettage).	10	Afebrile when curetted.

The patient was said to be well until the sixth day *post partum*, when she suffered backache, fever and anorexia. Diarrhoea and insomnia began five days later. The lochia were scanty.

She was admitted to hospital on the fourteenth day, delirious after a rigor that morning. She was pale and had a dry tongue, fever to 103.6° F., and pulse rate of 180 per minute. No abnormality of the heart or lungs was detected. The abdomen was soft and moved well; tenderness was present over the uterus. The cervix was open and there was fullness in the right fornix. Blood cultures yielded *Streptococcus hemolyticus* Group C.

For more than six weeks the patient now suffered the tachycardia and swinging temperature of a severe infection. On the fourth day after her admission to hospital she complained of pain and tenderness in the upper portion of the left humerus; this lesion persisted for several weeks, when an X ray examination revealed a small area of necrosis in the surgical neck of the bone.

On the ninth day after the patient's admission to hospital pain developed in the right knee and 10 cubic centimetres of turbid fluid were aspirated from the joint. On the thirteenth day pain developed in the left buttock, and two days later an extensive abscess was opened, pus and large sloughs being freed. After the fifth week a small abscess in the right buttock was drained. Pain and tenderness then developed in the left tibia; but this last lesion subsided, and a later X ray examination revealed no abnormality. On the forty-ninth day the hallucinations and restlessness of acute confusional insanity developed. They resolved after one week. Early in the eighth week a small breast abscess developed; this responded to two aspirations.

On the sixty-ninth day after her admission to hospital the patient's temperature was normal for the first time. Ten days later she was discharged from hospital.

Group G Infections.

There were six puerperal infections due to *Streptococcus hemolyticus* Group G. All were mild, and the period of pyrexia varied from two to twelve days. All the cases were unexceptional clinically. Three patients had suffered vaginal or perineal lacerations, and in one of these and one other the haemoglobin value was below 60% (Sahli).

Macdonald⁽¹²⁾ recently described three Group G infections, in two of which infective endocarditis caused death. Neither of these cases followed childbirth or abortion. Macdonald's non-fatal case, one of septic abortion treated in this hospital in 1929, conformed to our clinical description of a moderately severe infection.

Summary.

While Group A streptococci were, as was to be expected, the predominant infecting organisms in this series of 110 consecutive cases of hemolytic streptococcal infection, they were not of exclusive importance. Streptococci belonging to Groups B, C and G were responsible for 25% of the cases.

The outstanding feature of the 82 infections due to *Streptococcus hemolyticus* Group A was the high proportion of mild cases (70%). In our experience the mere identification of streptococci from the vaginal swab as belonging to Group A is not sufficient evidence on which to base prognosis. The correlation we observed between severity of infection and encapsulation, and to a less extent certain cultural characters of the infecting strain, has been described in a previous publication.⁽⁶⁾

Of the infections due to streptococci not of Group A, those due to Group B streptococci were the most numerous and the most serious. Among the twelve women infected with Group B strains there were four deaths, three due essentially to the infecting streptococcus. In two of these cases the cause of death was acute infective endocarditis.

The ten Group C infections were for the most part mild. That Group C streptococci can cause a severe infection, however, is evident from a case seen prior to this series and described in this paper.

There were six Group G infections, all mild. The only known serious Group G infection among the records of this hospital is one of septic abortion already reported by Macdonald (1939).

The mild infections due to streptococci of Groups B, C and G did not differ clinically from mild infections due to *Streptococcus hemolyticus* Group A.

Acknowledgement.

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References.

- ⁽¹⁾ R. C. Lancefield and R. Hare: "The Serological Differentiation of Pathogenic and Non-Pathogenic Strains of Hemolytic Streptococci from Parturient Women". *The Journal of Experimental Medicine*, Volume LXI, 1935, page 335.
- ⁽²⁾ T. W. Eden and E. Holland: "A Manual of Obstetrics", Eighth Edition, 1937, pages 536 and 541.
- ⁽³⁾ M. H. Phillips: "The History of the Prevention of Puerperal Fever". *The British Medical Journal*, Volume I, 1938, page 1.
- ⁽⁴⁾ "The Queen Charlotte's Text-Book of Obstetrics", 1939, pages 415 and 463.

- (9) A. T. Fuller: "The Formamide Method for the Extraction of Polysaccharides from Hemolytic Streptococci", *The British Journal of Experimental Pathology*, Volume XIX, 1938, page 130.
- (10) H. M. Butler and A. M. Hill: "Hemolytic Streptococcal Infections following Childbirth and Abortion. 1: Determination of Virulence of Group A Strains", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume I, 1940, page 223.
- (11) L. Colebrook and M. Kenny: "Treatment of Human Puerperal Infections, and of Experimental Infections in Mice, with Prontosil", *The Lancet*, Volume I, 1936, page 1279.
- (12) L. Colebrook and M. Kenny: "Treatment with Prontosil of Puerperal Infections", *The Lancet*, Volume II, 1936, page 1319.
- (13) L. Colebrook and A. W. Purdie: "Treatment of 166 Cases of Puerperal Fever by Sulphanilamide", *The Lancet*, Volume II, 1937, page 1237.
- (14) R. Hare: "Puerperal Sepsis and its Prevention", *The Canadian Public Health Journal*, Volume XXVIII, 1937, page 554.
- (15) R. M. Fry: "Fatal Infections by Hemolytic Streptococcus Group B", *The Lancet*, Volume I, 1938, page 199.
- (16) I. Macdonald: "Fatal and Severe Human Infections with Hemolytic Streptococci Group G", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume II, 1939, page 471.

SOME ASPECTS OF HEAD INJURIES.¹

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THE subject of head injuries is wide and controversial; and in a short paper it is impossible to do more than to discuss a few aspects of the condition. It is proposed to discuss: (i) the significance of unconsciousness, (ii) the treatment of prolonged stupor and (iii) subdural hæmatoma. Much has been said and written of the last subject; but it may well be mentioned again, for, contrary to the impression given by some authorities, the diagnosis of that condition is by no means always a simple matter.

The Significance of Unconsciousness.

Apart from trifling trauma, there must be few cases of cerebral injury in which unconsciousness is not one of its signs. It may be merely the transient unconsciousness associated with the initial concussion, the basis of which has not yet been adequately explained. But I am concerned with the more sustained unconsciousness, which may either persist from the initial concussion for periods from a few hours to many days, or which may develop after a lucid interval. The pathological explanation of sustained unconsciousness is still the subject of much speculation, and proof of any theory is difficult to produce; but I believe that the views here expressed have considerable clinical evidence to support them. The difficulty in obtaining *post mortem* evidence in support is twofold: firstly, the difficulty in obtaining permission for *post mortem* examination in every fatal case of head injury, and secondly, the fact that, in so many of the fatal cases in present conditions of fast-moving traffic, the trauma to the brain is so widespread as to make it impossible to determine which lesion was responsible for the state of unconsciousness.

One dictionary defines unconsciousness as "that state in which the individual is temporarily

deprived of conscious mental activity". It is important to realize that coma or deep drowsiness are only two extreme forms of unconsciousness; the patient may be irrational, or restless, noisy and difficult to control, resenting interference; he may be maniacal; he may manifest automatism. The one essential feature is that he shall be incapable of normal mental activity, and deprived of his normal powers of understanding and realizing his environment. Norman Dott has emphasized the fact that maniacal activity may be just as grave a warning of acute traumatic cerebral oedema as is the state of steadily progressive drowsiness.

There have been many theories as to the cause of this state of sustained post-traumatic unconsciousness. The theory which appeals to me is that which is known as the theory of periventricular trauma, and I believe it was first put forward by Rand and Courville, of California. The theory rests on the belief that a severe blow upon the skull produces a sudden compression of its contents; the fluid contents within the subarachnoid cisterns and the ventricles are incompressible; the brain substance is not. The brain tissue is, as it were, squeezed between the compressing force and the incompressible fluid in the ventricles; this results in mild cases in oedema of the periventricular tissues, and in severe cases in the production of petechial hæmorrhages in the walls and floors of the ventricles. This theory is summarily dismissed by Munro in a book on cerebral injuries which has recently been published, but he produces no reasons for its dismissal, nor a better theory to take its place. And there is sufficient *post mortem* evidence that periventricular petechiæ are produced by trauma in brains which do not show gross lacerations.

Has oedema or bruising of the walls and floor of the third and fourth ventricles any connexion with unconsciousness? I think there is considerable evidence to support this theory.

Operative Evidence.

Nowadays, many extensive intracranial operations are performed entirely under local anaesthesia. It is possible to make deep excisions of the cerebral cortex, or complete resections of the lobes of the cerebral hemispheres, without interfering in any way with the consciousness of the patient. But manipulation or bruising in the vicinity of the anterior end of the third ventricle, or of the fourth ventricle itself, in a patient under local anaesthesia, frequently produces unconsciousness, transient or perhaps lasting for many hours.

As an example, I may quote the case of removal of a colloid cyst of the third ventricle under local anaesthesia. The approach necessitated incision through the right frontal cortex into the lateral ventricle; during this stage of the operation the patient was alert and cooperative. But while the cyst was being delivered from the third ventricle through the right foramen of Munro, the patient lapsed into unconsciousness lasting twenty minutes; long before the operation was completed the patient was talking normally again.

¹Abstract of a paper read at a meeting of the South Australian Branch of the British Medical Association on September 30, 1939, at Naracoorte.

Norman Dott⁽¹⁾ mentions this observation in operations in the vicinity of the hypothalamus. It seems definite that trauma of the cerebral cortex alone will not interfere with consciousness. Penfield,⁽²⁾ as the result of his very great experience of cerebral resection and stimulation under local anaesthesia, suggests that consciousness is a function of the diencephalon.

Clinical Evidence.

Riddoch⁽¹⁾ points out that attacks of drowsiness or loss of consciousness are cardinal signs in patients suffering from tumours of the diencephalon.

Jefferson,⁽³⁾ writing of the syndrome of the tentorial pressure cone, also places great emphasis on the production of unconsciousness when a temporal lobe tumour causes compression of the diencephalon by impaction between the free lower margin of the falx and the *incisura tentorii*.

A female patient, aged fifty-three years, had suffered from headache for one week, being otherwise apparently in good health. She consulted her doctor about the headache on a Saturday, one week after the onset of the headache. She gradually became unconscious, and when seen on the following Monday she was deeply unconscious; early bilateral papilloedema was found, but no localizing signs were elicited. A large flap was raised and both the right frontal and the temporal lobes were exposed; a glioblastoma larger than a golf ball was found in the tip of the temporal lobe. The patient died without regaining consciousness.

This case is typical of those reported by Jefferson; the main feature was the loss of consciousness from compression of the diencephalon by tentorial impaction.

The Importance of Unconsciousness.

If one is prepared to accept, at least tentatively, the hypothesis that unconsciousness is indicative of a lesion of the diencephalon, the importance of the sign of post-traumatic unconsciousness becomes obvious, from both diagnostic and therapeutic aspects.

1. If sustained unconsciousness follows immediately after the injury, without any lucid interval, this theory indicates that the patient has suffered contusion of the tissues in the vicinity of the third ventricle. If the injury is moderate in degree recovery may be expected; but the duration of unconsciousness should be a definite guide to the length of time during which complete rest should be enforced. On the other hand, if the initial contusion is severe, and particularly if it is associated with diffuse petechiae in the cerebral hemispheres and the resulting acute diffuse oedema, the patient will almost certainly succumb to hypothalamic failure.

2. Loss of consciousness following a lucid interval has long been recognized as a cardinal sign of compression by a localized lesion, such as an extradural clot. But acceptance of this hypothesis of unconsciousness compels the interpretation that it is not only a late sign, but a very grave sign, of compression. For instance: in the case of a right

middle meningeal hæmorrhage, the onset of unconsciousness indicates not mere compression of the underlying hemisphere, but commencing mid-line shift under the lower free margin of the falx, and impaction of the diencephalon between the falx and the *incisura tentorii*. It becomes a most urgent indication for operative relief. It has fallen to the lot of most of us to evacuate an extradural clot after some hours of unconsciousness and to anticipate hopefully a successful result, only to watch the patient sink into a deeper and fatal coma. It is said that if the brain readily reexpands and pulsates after removal of such a clot, the patient will live. This is not so, as most of us have seen. The patient will live only provided the diencephalon has not been too grossly impacted. The important prognostic factors are the rate of onset of unconsciousness and the promptness of operative relief.

Kaplan⁽⁴⁾ considers that unconsciousness is more significant of progressive compression than the classical changes which occur in pulse rate and blood pressure; one would again wish to emphasize that it is a late and grave sign. In the light of recent research into the functions of the hypothalamic nuclei, it is not unreasonable to suggest that all the classical signs of progressive compression (changes in pulse rate, respiratory function and blood pressure, hyperthermia, loss of consciousness *et cetera*) are the result of interference with these nuclei.

In reference to this, one must mention the significance of pupillary changes. Munro does not regard the pupillary changes as of great value in determining the side of compression. My small experience is quite to the contrary. Kernohan and many others have described and explained the condition of extradural clot with ipsilateral hemiparesis, as due to impaction, against the tentorial margin, of the cerebral peduncle on the side opposite the clot. I have only once observed the condition. Reference to the course of the third nerve will explain the significance of unilateral palsy of the *sphincter pupillæ*. The two nerves emerge from between the peduncles, almost in the mid-line, and each passes upwards and laterally at an angle of about 45° with the mid-line to reach the outer wall of the cavernous sinus. A right-sided extradural clot will eventually push the mid-brain downwards and to the left, stretching the third nerve of the same side and causing paralysis of the ipsilateral pupil. I believe that most authorities would consider that the development of oculomotor palsy was the only absolutely certain indication of the side of the compressing lesion.

The Management of Prolonged Stupor.

The conditions of prolonged post-operative stupor and of intermittent disorientation are fairly common. The probable explanation is as follows. Any laceration, or even oedema, of brain substance results in varying degree in the formation and accumulation of the end products of cell disintegration and increased cell metabolism. Until

these have been removed, normal cell metabolism and normal cell function cannot be restored. Moreover the accumulation of these end products increases local molecular concentration, which can be lowered only by absorption of water from the circulating fluids. This tends to sustain or increase the existing cerebral oedema.

Removal of these end products is retarded by congestion or further oedema, and is hastened by any treatment which reopens venous and capillary circulation. This is achieved by the use of dehydration treatment.

It is therefore reasonable to assume that the presence of a high protein content in the cerebro-spinal fluid of such stuporose patients some days or weeks after injury indicates that the process of removal of the end products of damaged cerebral tissue has not yet been completed. It is also probable that much of the interference with intellectual functions is due to the accumulation of these end products and the local oedema so produced.

An example of such a condition was the case of a man, aged thirty-four years, who suffered a severe compound fracture of the skull with penetration of the right frontal lobe in April, 1939. Immediate excision of the wound and damaged area of brain was carried out, with primary suture. When admitted to the Adelaide Hospital five weeks later he was still in a state of stupor, from which he frequently roused to exhibit changes of personality and behaviour, defective memory and loss of appreciation of time and place. He had a gross lesion of the left optic nerve, with permanent blindness, and minor lesions of the left sixth, and right seventh, eighth and twelfth nerves. The cerebro-spinal fluid pressure was only 160 millimetres of water, but the fluid still contained 700 milligrammes of protein per 100 cubic centimetres. Under prolonged treatment by rest and dehydration he has made a complete objective recovery, except for the blindness of the left eye.

In a case of prolonged stupor repeated lumbar puncture should be performed, for the purpose of acquiring information as to the removal of these end products. As long as the protein and cell content of the cerebro-spinal fluid is above normal, so long should one persist in the treatment by dehydration and complete rest.

Dehydration may be carried out over long periods by repeated lumbar puncture, or by the oral or rectal administration of hypertonic saline solutions. It cannot be too strongly emphasized that until the protein and cell content of the cerebro-spinal fluid is normal the patient must be kept at complete rest.

It may not always be possible to have these estimates carried out; but if the pathology of this condition is appreciated, it will be sufficient to insist on complete rest, the use of sedatives and dehydration, until the patient has fully recovered his normal mental activity.

Subdural Haematoma.

Much has recently been written of subdural haematoma, and some confusion has been occasioned by the failure to distinguish between the various pathological types. Traumatic subdural haematoma may be divided into two main groups: syntraumatic and metatraumatic.

1. The syntraumatic group includes those cases in which the signs follow shortly after the infliction of a definite, and often severe, injury. Because the injury is appreciable, the haemorrhage occurs freely (and often from a cortical artery), and the production of signs is rapid. As Kaplan points out, in some cases the haematoma is only part of extensive injuries which are of themselves rapidly fatal. But when there is no associated gross lesion, the clinical picture is very similar to that of unilateral extradural clot. The syntraumatic haematoma is nearly always unilateral, and its signs develop after a short lucid or latent period.

2. The injury in the metatraumatic group is most commonly referred to as the chronic subdural haematoma. The condition of "suspended brain" predisposes to it—that anatomical condition in which the cerebral veins, in making their way towards the longitudinal sinus, pass early from the surface of the brain into the subdural space, and so have a relatively long course in the subdural space. The condition of "suspended brain" is exaggerated by any condition which leads to a reduction in size of the hemispheres, and is therefore particularly pronounced in certain middle-aged or elderly patients with cerebral vascular degeneration.

In such a person, an insignificant bump or fall may result in a relatively wide range of movement between the brain and the fixed longitudinal sinus, with tearing of the cerebral veins in the subdural space. Hence the majority of these haematomata are bilateral, and being venous in origin, are slow in production of signs. In fact, no signs may be produced until the clot has become encysted after some weeks and then begins to expand under the influence of osmotic changes.

My own series is small, consisting of only twelve cases of true chronic subdural haematoma. But, such as they are, they have been in accord with the much larger series of authorities such as Kaplan, and have confirmed the following impressions:

1. The only invariable features are headache, generally severe and progressive, and the onset of interference with consciousness, often intermittent at first, but finally progressing to loss of consciousness.

2. The actual head injury is insignificant, and has often been forgotten by relatives.

3. The physical signs and the results of estimation of the pressure and examination of the cerebro-spinal fluid vary enormously. In the series that I have studied abnormal signs and changes in the fluid were present in only about 50% of cases.

4. Hence, in somewhere about 50% of cases, one may strongly suspect the presence of a chronic subdural clot, but may be unable to find clinical proof.

5. Therefore, if suspicion is strong, one must be prepared to explore on suspicion. As has frequently been pointed out, exploration for subdural clot under local anaesthesia is not a severe undertaking, and the gravity of the condition under suspicion fully justifies the exploration.

In the various series studied, one feature in the findings in the cerebro-spinal fluid may be of interest. In all cases in which xanthochromic fluid was present, the manometric reading was high; while in all cases in which the fluid was clear and of normal protein and cell content, the pressure was normal or low. It is easy to imagine how the chronic encysted clot expands under osmotic influence, and gives rise to increase of intracranial tension and to staining of the cerebro-spinal fluid; and to understand how such a chronic clot finally causes headache and unconsciousness. But the explanation of unconsciousness in the case of clot associated with low pressure is not yet forthcoming. My purpose in bringing this subject into this address is to urge that reasonable suspicion of the presence of a chronic subdural hæmatoma is sufficient justification for immediate exploration. I forget the author of the quotation: "Better a negative exploration than a funeral." It is a quotation particularly applicable to this condition.

References.

- ⁽¹⁾ W. E. Le Gros Clark, J. Beattie, G. Riddoch and N. M. Dott: "The Hypothalamus: Morphological, Functional, Clinical and Surgical Aspects", 1938.
⁽²⁾ G. Jefferson: "The Tentorial Pressure Cone", *Archives of Neurology and Psychiatry*, Volume XL, 1938, page 857.
⁽³⁾ W. Penfield: "Cerebral Cortex in Man: Cerebral Cortex and Consciousness", *Archives of Neurology and Psychiatry*, Volume XL, 1938, page 417.
⁽⁴⁾ A. Kaplan: "Subdural Hematoma, Acute and Chronic, with Some Remarks about Treatment", *Surgery*, Volume IV, 1938, page 211.

THE LAST ILLNESS OF SIR HENRY MORGAN, KT., BUCCANEER AND COLONIAL GOVERNOR, AS DESCRIBED BY HIS PHYSICIAN, SIR HANS SLOANE, BART., WHEN RESIDENT IN JAMAICA, IN THE YEARS 1687 TO 1688, AND SOME ACCOUNT OF THE LATTER'S SUBSEQUENT CAREER.

By R. SCOT SKIRVING,
Sydney.

I SUPPOSE very many wholesome schoolboys have read tales of the deeds of Sir Henry Morgan, the colourful buccaneer, who sacked Panama, and it is quite likely that some medical men may have heard of Sir Hans Sloane, who, among many other laudable activities, largely founded the Chelsea Physic Garden and the British Museum.

I propose in this little paper to repeat quite shortly Sloane's account of his attendance on his unusual patient—Henry Morgan.

Perhaps it will not be out of place if I mention the main facts concerning the lives of these two very diverse personalities.

Henry Morgan came of a decent Welsh family, and was born about 1635; from the jump he was a lad of lively parts and an adventurous mind. Quite a literature exists concerning him, some of it more or less correct and interesting, the rest largely fictitious and poor of its kind. Certain it seems that after some rather tempestuous passages at home he struck out for himself, and somehow

reached the island of Barbados, perhaps in rather distressing circumstances.

I imagine the then existing semi-slave trade business in white people was much the same kind of traffic, a good many years later, when courtiers of James II, after Sedgemoor, sold some of the defeated adherents of Monmouth, mostly poor, ignorant West Country yokels, to planters in the West Indies. Their descendants, I believe, exist still as "poor whites".

Well, our gallant Henry Morgan, "having served his time at Barbados, obtained his liberty" (I quote from Esquemeling, his associate in buccaneer-



ing), "transferred himself to the Island of Jamaica, there to seek new fortunes. There he found two vessels of Pirates that were ready to go to sea. Being destitute of employ, he put himself into one of these ships with intent to follow the exercises of that sort of people. He did so to good purpose, and having performed three or four voyages with profit and good success, he agreed with some of his comrades who had saved a little to join stocks and buy a ship."

There is usually room at the top for a really good man, and Morgan, with his energy and readily learned skill, was naturally chosen commander.

Suffice it to say that he prospered greatly, and soon rose to be what I may call the Prince of Pirates of his day. He was in deed and name "The Admiral of the Buccaneers" and must have had glorious adventures of a lurid kind during those pre-cirrhotic years of fighting Spaniards on-sea and

land, looting ships and towns. I do not doubt he deserved his advancement in his profession. He had fiery courage and great ability. He possessed, in a remarkable degree, the virtues and vices of his race, his occupation, and the times in which he lived. He was enterprising and far-seeing, and a real leader of wild men; but he was also greedy of wealth, selfish, mean and sometimes treacherous, even to his shipmates and co-adventurers. Later on he was intemperate and debauched. Yet he made good in many ways, actually becoming, more than once, the Lieutenant-Governor of Jamaica, and Captain-General of the forces of that island.

It is true that he was sent home for trial for his various misdemeanours, mostly concerning piracies; yet, he was such a good mixer and dressed his window so well at the lax Court of Charles II, where he distributed well-placed presents to the unscrupulous courtiers of that monarch, that he returned again to the Caribbean scenes of his labours, not only without punishment, but decorated with a knighthood!

I do not propose to tell you further of his extraordinary successes against the Spaniards on the mainland, for, as I have said, they are well known to boys of all ages, and are set forth at length by Esquemeling, and by other historians of these adventures.

Such, then, was the patient of Dr. Hans Sloane, of London, who in 1687 was resident in Jamaica; he did wisely in consulting the latter, and he did unwisely in not following his advice. Who, then, was this already distinguished young stranger visiting the West Indies?

I had completed this paper when Dr. L. Cowlishaw lent me Professor Thomson's admirable and informative address on the life and times of Sir Hans Sloane, a fitting tribute from one distinguished son of Ulster to another. I found much that I thought I ought to incorporate in my own small appreciation of this Ulster Scot of bygone years, and have done so freely, with grateful thanks to Professor Thomson, to whom I make full acknowledgement for some passages in this paper.

Hans Sloane was born in County Down, Northern Ireland, in the year 1660. He was the son of the leader of the Scottish colony planted there in the time of James I. In early years, and even later on in life, he suffered from hæmoptysis. This sign made him lead a careful, abstemious life in an unabhastemious age. He was a keen student of nature and piously brought up. I think he had a good general and medical education, but he graduated at the not very exalted University of Orange in 1683—a non-teaching body, despised by the faculties of Paris and Montpellier, which did not grant their degrees to Protestants.

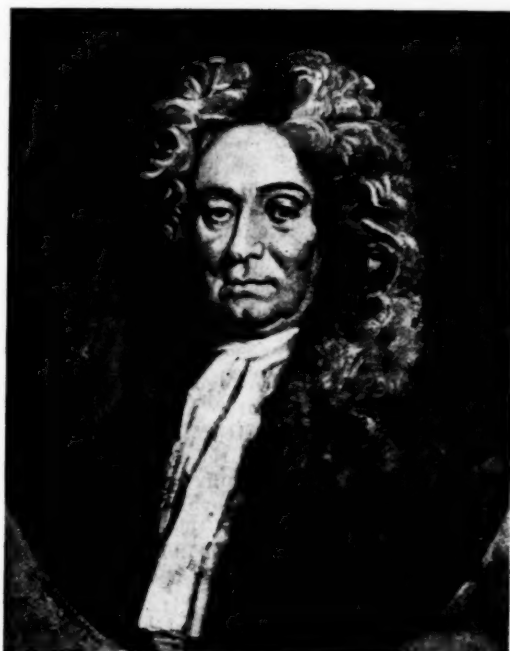
However, he also was a lad of parts, for, by the time he was twenty-seven years old he actually was a Fellow of the Royal Society, and was well thought of in scientific circles.

Boyle, the distinguished chemist, the son of the great Earl of Cork, introduced him to Sydenham, who happened at the time to be laid up with gout,

on which was superimposed the tortures of renal calculus.

Boyle's letter of introduction stated that young Sloane "was a ripe scholar, a good botanist, and a skilful anatomist".

Sydenham read the eulogy, and eyed its bearer; then said he: "All this is mighty fine, but it won't do. Anatomy! Botany! Nonsense! No, Sir, you must go to the bedside. It is there you can alone learn disease." Thus said the father of clinical medicine in England, long years ago. His words are true today, and Sloane no doubt profited by them.



Sir Hans Sloane.

Sydenham soon discovered Sloane's ability and gave him a valuable introduction to practice. I wonder if he was a fellow pupil in Sydenham's House with Thomas Dover, who was just the same age, the compounder of the powder which bears his name, and who also has a claim to our memory by his participation in that unforgettable voyage when Alexander Selkirk was found marooned on Juan Fernandez.

It was indirectly, I think, through Sydenham's influence that Sloane obtained the post of personal medical attendant to the Duke of Albermarle, when that nobleman was appointed governor of Jamaica.

But Sloane was not only a good doctor, but a canny Ulster Scot, for he asked and obtained "£300 down for preparations for his sojourn abroad, and a salary of £600 a year. This he spent mostly on Peruvian Bark, which he sold later at a handsome profit." He was an excellent botanist and a keen collector of almost anything of general or scientific interest. He actually spent only about fifteen

months in the West Indies; but he spent that time well, gathering a large collection of plants, a Latin catalogue of which he afterwards published; nor did he neglect his profession proper.

On his return to London he steadily rose to high eminence as a consulting physician. He became in time president of the Royal College of Physicians, and actually succeeded the truly great Sir Isaac Newton as president of the Royal Society. He was certainly the moving spirit in making the Botanical Garden at Chelsea what it became in those times, and to him and his collection does our nation owe the British Museum. That collection contained over 200,000 articles, all meticulously catalogued. He thought it cost him over £50,000 and its real worth was probably £80,000.

Sloane righteously judged its value to the nation not alone in terms of money. But who could afford to buy it *en bloc*? He said in his will "that these things, tending to the glory of God, to the confutation of Atheism, to the use and improvement of Physic—and to the benefit of mankind, should remain together and not be separated".

The collection was too valuable to be given away without wronging his family. It was offered to King George II for £20,000, and so, in this way, did the British nation find itself the recipient of that great storehouse of human achievement, the British Museum.

Among his lesser titles to fame, he attended both Queen Anne and King George II, and attained a baronetcy, being, I think, either the first or second practitioner of medicine to receive an hereditary honour. He certainly is the only man who has ever been president of both the Royal Society and the Royal College of Physicians. The latter post he held for sixteen years (1719 to 1735), a period only exceeded by that of Sir Henry Hallford (1820 to 1844).

It is painful to read of the last hours of large, kind, but stupid Queen Anne; at her final illness he saw her in consultation with "Arbuthnot, who came with no sharp quip upon his lips, with Dr. Mead, who had come in place of Radcliff, for he had taken physic the night before, and feared that it might work inopportunately". Four other learned physicians were present in periwigs and lace ruffles: Blackmore, the poet of sorts, who, if I remember rightly, attended Dryden; Hamilton, the man-midwife; Shadwell and Laurence, about whom I know little, or nothing.

Of these, Sloane had been Anne's "beloved Physician", and "returned her affection".

Anne's end was, I fear, not one of peace. Just before the last scene, "the Council had sat till 2 a.m., with their failing Mistress racked with pain and weakness in the chair, and Oxford and Bolingbroke attacking each other across the table"; and soon an apoplectic attack with convulsions followed.

One wonders if these "learned solemn physicians, as they examined the gross and unwieldy body of their dying Queen", remembered the eighteen small coffins of her dead children, lying higgeldy-

piggeldy in the same vault in Westminster, in which lay also the Queen's mother, that earlier Anne, first wife of James II, and her sister Mary, and also Elizabeth of Bohemia, "ancestress of the line to supplant her father's house", and likewise the body of Mary Queen of Scots. There too lie the numerous other children of her father, James, no less than eleven—all blighted in infancy, "withered, as it must have seemed, by the doom of Providence" or by a cause we know now, and treat not unsuccessfully.

If they knew and recognized that crowned heads and ancient royal houses could suffer from the same destroying organisms as lesser folk, at least they rightly held their peace, and made no sign, save signing a bulletin that "old-standing gout had settled on her brain"; I wonder!

Sloane advised bleeding, and it was done, and consciousness returned "and the Queen placed the Treasurer's Staff in the hands of the Whig Duke of Shrewsbury, and the succession of the Elector of Hanover was assured".

Among the many famous patients seen by Sloane I specially like to remember Samuel Pepys, whom he saw in his last illness. The actual cause of his death was a pyonephrosis, following a long history of renal calculi.

I do not think that Hans Sloane married for money; but he certainly wedded the wealthy widow of a Jamaican planter, and their marriage was happy and fruitful. There being ample means, he exercised a gracious hospitality, especially to learned and foreign visitors of intellectual eminence. Händel's visit, however, to that pleasant house in Bloomsbury was "marred by an unlucky incident, for the great musician laid his hot buttered muffin down on one of his host's most treasured and precious manuscripts. From Händel's description of the scene, it is evident that Sloane expressed his feelings with some heat."

He was also, apart from his medical skill, an excellent business man, and unlike most doctors he invested wisely. Perhaps, indeed, his name and memory come down to us today more because of these investments than because of his actual contributions to science or medicine.

Young Australian doctors who most righteously go to do post-graduate work at home may even know him by name, for it is tacked on to a place, a street and a square in London, even if they forget to find out what an excellent doctor and distinguished consultant he must have been in those times.

He can hardly be placed, I think, in the very first rank of British physicians so far as his actual output of medical work is concerned; but he was conspicuously able, industrious, far-seeing, and quite a creditable president, both of his College and in the wider post at the Royal Society—most truly a useful and distinguished career, which lasted until 1753.

Sloane's notes on Morgan's illness seem to me to show that he was, in his day, a shrewd, sensible practitioner, and could set out, for all time, a

clinical record of Morgan's progress towards death in a way convincing and clear, undimmed after a lapse of over 250 years. I would not ask for a more general yet graphic and correct account of the final stages of a case of cirrhosis of the liver; and such a picture does Sloane paint of Morgan's end.

Certainly Morgan must have earned and deserved all he got of hepatic woe. He almost surely must have had malaria. He probably had contracted syphilis, and he certainly drank persistently to excess, mostly rum. All hands seem to agree that he was a debauchee. Scandalous West Indian tales imply that he left many chocolate-coloured descendants. Be all that as it may, Sloane, I keep repeating, tells his tale with a convincing familiar clarity which leaves the modern reader in no doubt as to the manner of the end of that intriguing scamp who sacked Panama and harried the Spanish Main for many a long day.

Sloane wrote a record of his West Indian experiences entitled "A Voyage to the Islands of Madeira, Barbadoes, Nieves, St. Christopher, and Jamaica", and from this work the following matter relating to Sir Henry Morgan is taken.

Of the Diseases I Observed in Jamaica, and the Method by which I used to Cure them.

Sir Henry Morgan aged about 45,¹ lean, sallow-coloured, his eyes a little yellowish, and belly a little jutting out or prominent, complained to me of want of appetite to victuals; he had a keeking or reaching to vomit every morning, and generally a small looseness attending him, and withal was much given to drinking and sitting up late, which I supposed had been the original cause of his present indisposition. I was afraid of a beginning of a dropsie, and advised him to an easie vomit of Oxymel: Scillae with the help of a feather and thin water gruel, fearing Vin. Emet. might disorder him too much by putting him into a looseness, or too great evacuation.

After that I gave him some Madera wine, in which the roots of Gentian, tops of Centaury etc., had been infused, with which vomit, it working easily, and the bitter wine taken every morning for some days, he recovered his stomach, and continued very well for a considerable time.

Not being able to abstain from company he sat up late, drinking too much, whereby he not only had a return of his first symptoms, but complained he could not make water freely. His water was thick and very red, and his legs swell'd a little.

When these symptoms appeared Dr. Rose and I being joined, we ordered him an electuary of Cassia, Oil of Juniper, Cremor Tart., and other things to purge the watery humours, enjoin'd temperance, and desired the continuance of his former medicine. This course did very well with him, but making but very little water, and being much troubled with belchings, he sent for another doctor, who, when he came, was of opinion that his disease was a tympany, and that the swelling of his belly came only from wind, according to Hippocrates, and that he was troubled with neither the beginning of a dropsie nor had gravel. I told him later observations upon the dissection of deceased morbid bodies, had discovered the bellies of people dying of supposed tympanies, to be distended with water, and no more wind than what is supposed to be the effect of phlegm, and crude humours lying in the stomach and guts. I desir'd him that we should put off talking of the theory, and come to the practice, that perhaps we might very well agree in the medicines he should take, as it very often happens to

physitians who may disagree in the theory, and yet agree in the practice. I waited on Sir H. and told him Dr. Rose's and my opinion, which agreeing, he was satisfied therewith. We gave him all manner of diuretics, and easy purges we could find in Jamaica, linseed and juniper berries, infus'd in Rhennish wine, Milleped.² ppd. in powder, juniper water, advis'd him to eat juniper berries, used oil of scorpion, ung. dialth, outwardly, by which means he recovered again.

On intemperance he fell into great looseness, threatening his life, which, by an opiate at night we stopt, and he enjoy'd his health for some time longer very well. Falling afterwards into his old course of life, and not taking well any advice to the contrary, his belly swelled so as not to be contained in his coat, on which I warned him of his very great danger, because he being very weak, and subject to a looseness, there was no room for purging medicines, which seem'd to be the greatest remedies for his dropsie, threatening his life, seeing diuretics did not now produce the desired effect.

On this alarm, he sent for three or four other physitians, who, I was told, said he had no dropsie, because his legs did not swell, the reason of which was, because he lay in a hamac with his legs up, and us'd very little exercise.

They advised him a Cataplasma of vervain³ of this country etc., for his swell'd belly, and would have given a vomit next morning, but that was an unlucky day, as indeed it had in all likelihood been to him, if he had taken it, for he fell naturally, by only the Cataplasma, into a very dangerous looseness, which had almost carried him off, so the thoughts of this proceeding was put off. He changed soon his physitians, and had first a black, who gave him Clysters of Urine, and plaister'd him all over with clay and water, and by it augmented his cough.

He left his black doctor and sent for another, who promised his cure, but he languished, and his cough augmenting, died soon after.

And so ended the varied and hectic career of Sir Henry Morgan.

Bibliography.

- "Encyclopædia Britannica."
- "Dictionary of National Biography."
- J. Esquemeling: "The Buccaneers of America."
- W. W. D. Thomson: "Some Aspects of the Life and Times of Sir Hans Sloane", *The Ulster Medical Journal*, January, 1938.
- Woodes Rogers: "Cruising Voyage."
- Stanley: "Memorials of Westminster Abbey."
- P. Gosse: "The Death of Sir Henry Morgan", *St. Bartholomew's Hospital Journal*.
- Frederick Treves: "Cradle of the Deep."
- R. Scot Skirving: "Two Sea-Faring Doctors of the Past: Lionel Wafer and Thomas Dover", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume I, April 12, 1924, page 358.
- R. Scot Skirving: "Diathesis: Gout, Tuberculosis, Cancer", *THE MEDICAL JOURNAL OF AUSTRALIA*, Volume I, January 3, 1931, page 23.
- Hans Sloane: "Voyage to the West Indies."

Reviews.

GYNÆCOLOGY.

THE outstanding and most attractive text-book of gynaecology of the past year has been written by an Australian surgeon, Dr. Herbert H. Schlink.³ He has been lecturer and examiner in gynaecology in the University of Sydney for many years and at the same time he has acquired a high reputation as a surgeon in Australasia. He is, therefore, fully qualified to write with complete authority upon what is really his life's work.

¹ Small centipede-like insect ground into a powder.

² *Verbena officinalis*; has been used for epilepsy.

³ "Gynaecology", by H. H. Schlink, M.B., Ch.M., F.R.A.C.S.: 1939. Australia: Angus and Robertson Limited. Medium 8vo, pp. 572, with illustrations. Price: 32s. 6d. net.

¹ Morgan was, I think, older, probably about fifty.

Early chapters are devoted to a clear and concise description of the anatomy and physiology of the female pelvic organs, and throughout the work a thorough review is given of the various pathological changes that may be encountered, so that a knowledge of the subject is built upon a safe and scientific foundation.

The section on methods of examination is of special value to both student and practitioner. An important feature is the description of how to manage and gain the confidence of the patient.

Disorders of function, which are so commonly misunderstood, are clearly described and their treatment is laid down in a clear and safe manner.

The section dealing with endocrinology is excellent and most acceptable. The author has brought forward clearly all established facts, whilst avoiding a maze of theoretical and unproven considerations, and so has escaped from the confusion and contradiction that so commonly occur in a study of the endocrine system. His conclusions will greatly help, therefore, in endocrine therapy. They merit careful study.

Localized inflammation and birth injuries, with their resultant troubles and treatment, are well described and illustrated.

The problem of cancer in the female is dealt with fully and completely. This section also is splendidly illustrated. The author satisfactorily demonstrates by his methods and tabulated forms the highly successful standard of treatment that he has gained in his own clinic at the Royal Prince Alfred Hospital, Sydney.

In the section on operative gynaecology the author describes not only his own methods, but also other surgeons' technique that he has tried and found satisfactory.

An excellent discussion of post-operative complications and their prevention and management brings to a close this really first-rate text-book.

The subject matter throughout is entirely modern; the printing is excellent, and there is a profusion of beautiful illustrations. Therefore, the book can be warmly recommended as a standard text-book for both student and specialist. Dr. Schlink stresses the fact that gynaecological treatment has very important medical as well as surgical aspects. It follows that this text-book should be of great value also to the man in general practice.

OBSTETRICS AND GYNÆCOLOGY.

The third edition of "A Combined Textbook of Obstetrics and Gynaecology" by Munro Kerr and others is to hand.¹ This is a much better book than in previous editions. It is written in a clear concise style and printed on good paper. The illustrations are better and more numerous than in earlier editions; but they could still be improved.

The section on obstetrics is modern and well done. Theories are well set out and the authors are not too dogmatic. The sections dealing with antenatal care, toxæmia of pregnancy and puerperal infection are especially good and up to date. The same remarks apply to the descriptions of physiological processes throughout.

The gynaecological section is perhaps not quite so good. In the treatment of *metropathia hæmorrhagica* more stress is laid on X rays, radium and gonadotropic hormone therapy than on hysterectomy. In the present state of our knowledge this is perhaps a little premature.

¹ "Combined Textbook of Obstetrics and Gynaecology for Students and Medical Practitioners", revised and rewritten by J. M. Kerr, LL.D., M.D., F.R.F.P. and S. F.R.C.O.G., R. W. Johnstone, C.B.E., M.A., M.D., M.R.C.P., F.R.C.S., F.R.C.O.G., J. Hendry, M.B.E., M.A., B.Sc., M.B., F.R.F.P. and S. F.R.C.O.G., D. Baird, B.Sc., M.D., D.P.H., F.R.C.O.G., J. Young, D.S.O., M.D., F.R.C.S., F.R.C.O.G., D. McIntyre, M.B.E., F.R.F.P. and S. F.R.C.S., F.R.C.O.G., F.R.S.E., and E. C. Fahmy, M.B., F.R.C.P., F.R.C.S., F.R.C.O.G., with contributions by C. McNeill, M.A., M.D., F.R.C.P., and G. J. Wilson, M.B., D.P.H.; Third Edition: 1939. Edinburgh: E. and S. Livingstone. Medium 8vo, pp. 1204, with illustrations. Price: 37s. 6d. net.

Esthiomene is classed as a parasymphilitic disease, and in its description the name of Frei does not occur. In the treatment of gonorrhoea the sulphanilamides receive bare mention. Cervicitis is very well described, and we were pleased to note the stress that was laid on the various symptoms of this common complaint, which we think are not widely appreciated.

One passage reads: "If due care is taken to exclude an already existing cancer of the cervix, solely to avoid the occurrence of cancerous growth, it does not seem justifiable to supplant subtotal by total hysterectomy with its slightly higher mortality in all cases." This is the old argument over again. In our opinion the Worrall hysterectomy, which for all practical purposes is a total hysterectomy, is attended by very little, if any, greater mortality than subtotal hysterectomy. Furthermore, carcinoma has often occurred in residual cervixes.

The special ovarian tumours are very briefly described. We should like to know on what grounds a Brenner tumour can be described as a "feminising tumour".

The operative section is brief, as it must be in a text-book of this type. The authors still recommend the administration of castor oil and two enemata as a routine preparation before operation—drastic, surely. The original Gilliam operation for retroversion is fully described as a common procedure, with very slight mention of its disadvantages. The various modifications of Gilliam's operation, which are good, receive some mention.

There is a well-illustrated, interesting and instructive section devoted to radium, X rays and radiography in obstetrics and gynaecology.

The book should prove of great value to students.

MEDICINE AND AIR RAIDS.

"MEDICAL ORGANISATION AND SURGICAL PRACTICE IN AIR RAIDS" is, as its name implies, written for those concerned with the organization of the medical profession in time of war as well as those medical men whose duty it is to treat the wounded.¹

Both authors had experience in the Great War, both are active members of the military forces, and one of them visited Spain during the Spanish civil war.

In the first part valuable information is given regarding the organization of the profession to meet the medical problems caused by air raids on the civil population. The duties of first-aid posts, first-aid parties, dressing stations and casualty clearing hospitals, and their place in the scheme of defence are concisely described.

The chapter on aerial bombs is very instructive. First-hand information in Spain was obtained by one of the authors in December, 1938, on the type of casualty produced by bombs and the results of treatment. The application of a plaster cast to recent wounds of the limbs is discussed and the advice given is not to use plaster for at least four days after the wound is inflicted.

Special chapters are devoted to the treatment of abdominal, chest and head wounds. The authors have contented themselves with outlining those departures from civil practice which recent experience has shown to be of value. The information is given very concisely and should be known to all surgeons called upon to treat the wounded.

A very valuable chapter on nursing is added.

The general set-up of the book is very good, the diagrams although not numerous are well drawn and illustrate the text effectively. This book can be recommended not only to those interested in the subject of war surgery, but to those who are concerned with air raid precautions.

¹ "Medical Organisation and Surgical Practice in Air Raids", by P. H. Mitchiner, C.B.E., T.D., M.D., M.S., F.R.C.S., and E. M. Cowell, D.S.O., T.D., M.D., B.S., F.R.C.S., with a foreword by C. Wallace, Bt., K.C.M.G., C.B., F.R.C.S.; 1939. London: J. and A. Churchill Limited. Large crown 8vo, pp. 255, with 50 illustrations, including 1 coloured plate. Price: 10s. 6d. net.

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PHYSIOLOGY AND PATHOLOGY AND THEIR OVERLAP.

A GRATIFYING feature of medical science today is the ever-increasing overlap between the study of pathology and that of the normal body. Not so long ago the lines of demarcation between morbid and normal anatomy and between morbid and normal functioning were precise and rigid; the expert in one specialty denied the possession of even elementary knowledge in the other; the currents of research also flowed apart and refused to mix. Today we find the frontiers more and more difficult to define and directors of pathological laboratories will be found to have undergone a rigid discipline in physiological study and investigation and *vice versa*. The medical curriculum, always conservative, preserves much of the former detachment of the normal and diseased, and students, at least up till quite recently, often entered upon clinical study without the slightest idea of what their tutors were talking about when such subjects as inflammatory reaction or the processes of bone repair were being discussed. There are, of course, many branches of human physiology in which the

approach must be largely pathological. Modern knowledge of the functioning of the central nervous system, deprived of the clinical contribution, would be an exiguous remnant and much the same might be said of the study of the endocrine glands. The body responses in the production of immunity are occurring continually in the best of health and can hardly be labelled as disease reactions. Trauma may perhaps be put forward as essentially pathological, yet there are instances of physiological trauma as in the eruption of teeth, the severance of the umbilical cord and even in the separation of the placenta. The study of muscle and nerve functioning still remains remote from the investigation of diseased states; this is due partly to the ease of animal experimentation and to the undoubted fact that the mechanisms of muscle contraction and of the propagation of the nervous impulse are the same in all animals, at least in all vertebrates. Still the generalization can be made that the more human the study of physiology becomes, the greater is the donation from pathological observation and experiment.

From time to time the thesis has been advanced, and then lost sight of, that many pathological reactions have counterparts in normal bodily happenings. The obliteration of the *ductus arteriosus* and the sealing of the *foramen ovale*, did they occur as aberrances, would be described as typically morbid happenings. The involution of the post-parturient uterus bears a striking resemblance to certain degenerations classified as diseased, whilst hypertrophy and atrophy are manifested by a number of healthy organs. Many beautiful examples of the gradual transition from the normal to the morbid can be found in those self-regulating devices in which the body abounds. W. Ostwald was the first to announce as axiomatic that when an equilibrium is due to self-regulating adjustments that equilibrium must be oscillatory. A typical example is the thermostat in which the heat supply is automatically cut off when the desired temperature is exceeded. In the best thermostats the temperature is never really constant, but the amplitude of the excursion of the thermometer is reduced as far as possible. Through

the governor of an engine approximate uniformity of engine movement is brought about, but should the governor lose sensitiveness, or lag, then the engine shows periodicity in action or "hunts"; as the late J. S. Haldane pointed out, Cheyne-Stokes breathing is a typical instance of a governor "hunting". The diurnal variation of the temperature of the body in repose may be as much as 1.75° F.; anything above this is regarded as pyrexia though it may not necessarily be so. When a limb is given a certain posture by muscular action alone, and not by physical support, the limb shows tremor which in health may be detectable only when magnified by appropriate instruments; but when the tremor is obvious as in self-consciousness or fatigue it acquires semi-pathological complexion, whilst in the grosser forms associated with cerebellar lesion or disseminated sclerosis there is no doubt about the classification. That the eyeball in health manifests tremor modern methods have demonstrated, and indeed the effects of such were known to the pointilistic artist; but when we encounter nystagmus we have no hesitation in proclaiming it pathological. A fruitful field for investigation awaits here both pathologist and physiologist, for if such body constants as arterial pressure, erythrocyte count, and the volume, reaction and composition of the blood are regulated automatically, then an oscillatory equilibrium must be present, though with amplitudes of variation which in health escape ordinary observation, but the exaggeration of which would bring the condition into the realm of the diseased.

Perhaps it is in psychology that the overlap between normal and pathological is so wide. Tracking back perturbed mental states and activities to early experiences and urges, thwarted or intensified, has made some wonder how few people really are completely sane; but the query might be inverted and in all good faith we might ask how many of the allegedly aberrant are normal or close to normal. We are slowly approaching this attitude in our consideration of sexual abnormalities. A very pretty example of the existence of an innocent miniature of a pathological nervous condition is seen in the handwriting of the

great majority of persons whose health could not be called in question, and this is the dissimilarity of double letters when written quickly and without special attention. Most people make the second letter markedly divergent from the first. Should we call this a physiological *adiadochokinesis*?

These and other instances which will suggest themselves indicate that increasing overlap and correlation between physiology and pathology are to be welcomed, and that one method of fostering this reciprocal assistance is to bring the physiological laboratory into closer association, physically and spiritually, with the hospital.

Current Comment.

THE BEE AND THE MOSQUITO.

THIS is an insect-ridden planet. The class *Texapoda*, or insects, includes thirty or more orders, and of these the most important stingers, blood-suckers and irritators, according to Robert L. Benson,¹ are the *Anoplura* (sucking lice), *Hemiptera* (true bugs), *Trichoptera* (caddis flies), *Lepidoptera* (moths), *Diptera* (flies and mosquitoes), *Siphonaptera* (fleas) and *Hymenoptera* (bees, wasps and ants). A formidable array! And in the past some of them have wrought great havoc, spread plagues and fevers, decimated armies and wrecked empires. Their powers, once so mysterious, are now common knowledge; their weapons, once so secret, have been turned inside out, dissected and neatly drawn to scale in text-books. That, happily, is what secret weapons come to in the end. Now the powers of the insect world are being still further undermined by the allergists. Benson relates instances of extreme sensitization to the sting of the honey-bee and the bite of the mosquito. Major and minor casualties and several deaths have been attributed to bee stings. Occasionally hypersensitiveness to bee venom develops in an apiarist and necessitates his giving up his occupation. Benson affirms that extreme hypersensitiveness to the sting of the bee and other *Hymenoptera*, with its hazard to human life, can be eliminated, usually for a period of years, by a series of specific inoculations, and that large, painful and toxic infiltrations from bites of mosquitoes can be similarly prevented. The Lederle Laboratories, we are told, are now prepared to furnish both of these antigens for diagnosis and treatment. Benson believes that the antigens causing violent reactions are probably essentially different from those causing the ordinary mild reactions of the same insects. In the act of stinging

¹ *Archives of Internal Medicine*, December, 1939.

or biting the insect conveys a minute amount of antigen peculiar to its body and capable of sensitizing the person bitten. Desensitizing extracts were prepared from whole bodies of insects. An interesting observation was that in the case of mosquito extracts those prepared from the vegetarian male mosquito, when injected into the skin, caused a reaction as strong as those prepared from the blood-sucking female. This confirms the author's belief that violent reactions are due to some general body substance in the insect and not to the venom which causes the milder reactions.

Some there are, envious of their fellow creatures on warm summer evenings, who claim that insects do not bite them. Investigations seem to show that these people are attacked by insects but simply do not react to the venom or other poison injected.

RADIUM TREATMENT OF CANCER OF THE BREAST.

MANY of the earlier sponsors of radiation therapy in cancer prophesied the cessation of radical surgery in this field. A recent article in *The British Medical Journal* points out some of the modifications in our ideas which have taken place. As the years have passed, some such modifications have been necessary regarding breast surgery. Time has made the position clearer in many respects. Radical removal of cancer of the breast is a mutilating operation, and for this and other reasons it is interesting to read the Hunterian lecture of Paterson Ross in *The British Journal of Surgery*, October, 1939. Radium treatment for cancer of the breast was commenced at Saint Bartholomew's Hospital by Keynes in 1924; the lecture is in reality a review of the results obtained.

This method saves the patient the necessity for removal of the pectoral muscles, thus lessening shock and subsequent deformity. It does not obviate the mutilation of mastectomy. It is common for a lump to appear in the breast or axilla after radium treatment. This necessitates removal of the breast and the contents of the axilla. In the majority of cases cancer cells are found in the excised tissue. The treatment takes longer than the more radical method. There is first the procedure of implanting the radium. This is subsequently removed and a piece of tissue is excised for biopsy. Some three to six months later the simple removal is performed. It is interesting to have a specimen of the growth for histological examination, but the wisdom of the procedure at the second stage is open to question.

A more important question is the ultimate prognosis when compared with that offered by other forms of treatment. This comparison is hard to make. It seems, however, that the prognosis of breast cancer treated by radium is of the same order as that by radical surgery without irradiation. The claims of Keynes and Paterson Ross are presented in a modest and conservative way and are a suf-

ficiently strong argument against those who ridicule this form of therapy. A definite advantage would apparently accrue from the use of this method of treatment, namely, the less mutilating procedure together with a comparatively satisfactory result. The worse the clinical appearance, the greater the indication for the use of radium. In other words, in the early case, with a small, unattached swelling and without glandular involvement, radical surgery is the best form of treatment. The type III lesion is more suitable for radium therapy, the results being distinctly better than when the usual treatment is adopted.

It is disappointing to find that only three-year and five-year cures are given in the statistics. It is very probable that the percentage of three-year cures would be the same no matter what the form of treatment. J. Dueuing, writing in *Journal de chirurgie* of March, 1939, reported 46 cases in which only a palliative operation was done. Of the 46 patients, 30% lived three years. In many cases breast cancer recurs about three years after treatment, that is, a certain periodicity exists, as has been noted in other forms of malignant disease. Since radium therapy has been used in these cases for some sixteen years, it should be possible to have information regarding those treated ten years or more ago. This would give far more valuable information. Scarff and Handley have drawn attention to the important difference which exists between five-year and ten-year statistics in the case of carcinoma of the breast.

Other factors will influence the surgeon in his choice of treatment. The education of both the public and the medical profession should result in a preponderance of type I lesions coming for treatment. This is the group in which, admittedly, radical surgery offers greater chances of cure than radium. It must also be admitted that education does not always have the desired effect. Trout has stated that the longest period between the discovery of the swelling and the consultation with a doctor was found amongst doctors' wives.

Another aspect about which we have insufficient information is the efficacy of radical surgery combined with irradiation by X rays. This has been the common practice in this country for some years past, so that a critical survey of this method of treatment would be appreciated. It would appear that this form of irradiation has many of the advantages of the implantation of radium without the necessity of an operation at the time. Simple amputation is frequently done at a later date. The matter is still *sub judice*. Despite the claims of the Professorial Unit of Saint Bartholomew's Hospital, it is strange that this group of workers should be amongst an ever-decreasing number of advocates of radium therapy for breast cancer. One would like to know the number of ten-year cures, for most of these will be permanent. It still remains to compare the results with those of radical removal combined with irradiation with X rays or, even more logical still, irradiation combined with simple amputation of the breast and clearance of the axilla.

Abstracts from Current Medical Literature.

THERAPEUTICS.

The Treatment of Amœbiasis.

H. G. HUMMEL (*The American Journal of Digestive Diseases*, March, 1939) reviews the treatment of amœbiasis with the new amœbicidal drugs from the standpoint of relief of symptoms, toxicity and relapse. Most of the therapeutic preparations available are effective and produce cure in mild and early cases or in the symptomless carrier. Few of the drugs eradicate the amœbæ in deep-seated infections, and relapses in these cases are frequent. Cure of these patients can be obtained only by persistent and alternating treatment with the various amœbicides and the oral administration of large doses of bismuth to heal indolent chronic ulcers. Forty-one patients suffering from amœbiasis were treated with a new drug, diiodohydroxylquinoline ("Diodoquin"), containing approximately 64% of iodine. This drug was found to relieve the colonic and nervous symptoms incidental to this disease in a comparatively short time. Relapses were not observed in those patients who were treated with large doses of the compound. No toxic effects were encountered. Relapses occurred in four out of the first fifteen patients treated, because the dosage was insufficient to effect cure. The proper and effective dosage of "Diodoquin" should be 1.5 to 2.0 grammes, or 23 to 30 grains, per day for twenty days, three tablets of 0.21 gramme being given three times a day. The therapeutic effect on the colon and rectum was also observed by frequent sigmoidoscopic and stool examinations during and after treatment. Trophozoites and cysts disappeared in all cases from ten to fifteen days from the time treatment was started. "Diodoquin" relieved the clinical and pathological symptoms in this series of patients promptly in seven to fourteen days. It is therefore evident that this new oxyquinoline compound is a valuable drug, fulfilling the criteria of the ideal amœbicide.

"M & B 693."

E. DAVID (*The Lancet*, May 6, 1939) describes dermatitis and stomatitis in pneumonia treated with "M & B 693". A thin child, aged sixteen months, was treated for pneumonia with 0.25 gramme on January 10, and thereafter 0.125 gramme four times a day. After 11 days a diffuse measly rash appeared all over the body, with a temperature of 102° F.; and four days later a vivid scarlatiniform rash was superimposed, associated with severe toxæmia and high fever. "M & B 693" was suspended on the day on which the first rash appeared. A severe stomatitis developed on January 31.

The health was not restored to normal until March 1. There was no apparent ill effect on the blood count, and no uroporphyrins, but "M & B 693" could not escape responsibility for the rash and stomatitis. The total dosage of "M & B 693" was 6.75 grammes in 14 days—less than the doses recommended by Evans and Gaisford.

Reduction of Weight in Obesity.

EDGAR C. BECK AND ROGER S. HUBBARD (*New York State Journal of Medicine*, June 1, 1939) report a study of a series of obese patients before and after weight reduction. They were able to reduce 29% of their patients to normal weight with the use of a diet consisting of 40 grammes of carbohydrate, 80 grammes of protein and 40 grammes of fat, foods being chosen to incorporate a sufficiency of vitamins and minerals. Thyroid extract in small doses (0.02 to 0.045 gramme daily of desiccated thyroid) was used in most of the cases. The authors observed in their series of patients that 50% of those reduced to normal weight could maintain such weight for one year on liberal diets of low fat content, that the blood pressure readings in obese hypertensive patients could be reduced in most cases as their weight approximated the normal, that there were an approximation of the glucose tolerance curve toward normal levels and a moderate increase of the basal metabolic rate after weight reduction, and also that the weight loss was effected by a general reduction of the body size and measurements.

Chemotherapy in Syphilis.

HAROLD THOMAS HYMAN, LOUIS CHARGIN, JOHN L. RICE AND WILLIAM LEIFER (*The Journal of the American Medical Association*, September 23, 1939) present a preliminary report of the treatment of 25 patients suffering from early syphilis by massive dose chemotherapy carried out by the intravenous drip method. The intravenous drip apparatus was set up so that 5% dextrose in saline solution was administered by the gravity method at the rate of 100 cubic centimetres per hour. The treatment was started at 8 a.m., and at the end of each hour a solution of 0.1 gramme of "Neoarsphenamine" dissolved in 50 cubic centimetres of 5% dextrose was added to the drip apparatus. In turn this was followed for another hour by the plain dextrose solution, and this by another 0.1 gramme of the drug until the total daily dose had been administered. Therefore in a period of 15 hours the patient might receive 1,500 cubic centimetres of 5% dextrose solution and 1.0 gramme of "Neoarsphenamine". The patients were treated in hospital and a total dose of 4.0 grammes of "Neoarsphenamine" was administered over a period of five days, the diet given being semi-solid and rich in carbohydrate. The effect of massive therapy on the clinical manifestations of the disease was

rapid and dramatic, rapid healing of both primary and secondary lesions being noted; the results of dark-field examination invariably became negative within 24 hours, and serological reversal was obtained in 90% of cases in an average time of twelve weeks. The authors state that 57% of their patients experienced primary or Herxheimer fever; 63% manifested a secondary fever usually at the termination of therapy; 52% developed a toxic dermatitis, scarlatiniform, morbilliform and resembling *erythema multiforme*; and 38% developed a peripheral neuritis a few weeks after discharge from hospital. Investigation of the kidney, liver and hepatic functions did not disclose any significant evidence of damage to these organs. Apart from two patients who developed thrombocytopenia, which the authors attributed to an idiosyncrasy, there were no material changes in the blood picture. Routine examinations of the urine and faeces of their patients during their treatment in hospital enabled the writers to state that of the injected arsenic 20% was excreted in the urine and 32% was excreted in the faeces; in their opinion, significant retention or accumulation of the drug does not occur. The authors insist that their method is still in an experimental phase and cannot be recommended for routine clinical use until greater safeguards have been established and the factor of toxicity is reduced.

Sulphapyridine in Pneumonia.

N. PLUMMER AND H. ENSWORTH (*Bulletin of the New York Academy of Medicine*, April, 1939) describe the effects of treatment with sulphapyridine. Of the 111 patients treated, 88 were suffering from pneumonia. The initial dose was 2.0 grammes, followed by 1.0 gramme every four hours up to an average of 16.0 grammes. Severe nausea and vomiting were noted in some cases; 40% to 50% of the patients were so affected. Mild icterus was noted sometimes, but no other serious toxic symptom was observed. The mortality rate was 8%. The sputum was typed in most cases. Two deaths were from Type III infection and two were from pneumonia of unclassified type. The clinical response to sulphapyridine was as convincing as the apparent reduction in the death rate. The temperature fell within twenty-four to thirty-six hours in 45 of the 88 cases. The active phase of the disease was shortened, though the consolidation seemed to run its usual course.

Chemotherapy of Pneumococcal Pneumonia.

C. M. MACLEOD (*The Journal of the American Medical Association*, October 7, 1939) discusses chemotherapy of pneumococcal pneumonia. It has been shown that chemotherapy does not interfere with antibody formation in pneumonia. The defences against pneumonia are due to antibody forma-

tion; there is no phagocytosis of pneumococci unless the organisms are first sensitized by specific antibody. Sulphapyridine exerts a bacteriostatic effect on the pneumococcus; the organisms therefore multiply more slowly when this drug is used and antibody production is not affected, so that the formation of antibodies increases more rapidly than the pneumococci, with obviously beneficial results. The toxic effects of sulphapyridine should be noted. Nausea and vomiting are frequent and bear no relation to the dose of the drug or to its level in the blood. This effect is probably central, since vomiting occurs when the drug is given parenterally. Measly rashes occur, and cyanosis is noted when the level of the drug is high. Acute hæmolytic anæmia and granulocytopenia have been reported. Hæmaturia, depression of urea clearance and azotæmia have been recorded; and though it is not necessarily due to the drug, acute hæmorrhagic Bright's disease developed in two cases in which the drug was used.

NEUROLOGY AND PSYCHIATRY.

Vertebral Fractures from Convulsion Therapy.

THE Norwegian correspondent of *The Lancet* (*The Lancet*, August 5, 1939) states that when a radiological examination was made of the spines of eighty persons who had been treated with "Cardiazol" at an asylum in Norway, six were found to have compression fractures of vertebrae. Questioned in this connexion, a psychiatrist replied: "Oh yes, we have often had patients complaining of pain between the shoulders; but it is of no importance and it is confined to the muscles." The skiagrams came as a shock to him. It is suggested that the patient should never be allowed to double himself up during convulsion treatment.

Dementia Præcox and Mental Deficiency.

MENTAL defect and mental disorder are bound indissolubly; the State provides separate legislation and custody for each, but mental defect and schizophrenia appear to have much in common from both the clinical and pathological standpoints. To emphasize this relationship, Stanley G. James (*The Journal of Mental Science*, November, 1939) has made a study of the schizophrenic symptoms exhibited by mental defectives in a State institution. He joins issue with Tredgold in his view of the relationship of the three great classes of mental disorder: primary deficiency, primary psychosis and dementia; and he adduces evidence of insanity occurring as a particular variety of mental deficiency. *Dementia præcox* arising before puberty may cause great difficulty in

its differentiation from mental deficiency. Many known mental defectives develop a *præcox* reaction in institutions. The writer follows Tredgold's classification of mental deficiency into three groups: (i) the stable, placid, unemotional and industrious; (ii) those who are emotionally unstable and have violent and dangerous propensities; and (iii) those who exhibit mental regression and intellectual deterioration after reaching a certain level. It is these which the present writer considers to approach more closely to the schizophrenic group, as the early signs of deterioration are observed shortly after puberty. He further claims that the pathological findings in the two conditions are closely comparable, and believes that the evidence for the organic nature of *dementia præcox* outweighs that for the psychogenic view.

Sodium Diphenyl Hydantoinate ("Dilantin") in the Treatment of Epilepsy.

THE properties of sodium diphenyl hydantoinate and the history of its introduction in the treatment of epilepsy is given by C. N. Pratt (*The Journal of Mental Science*, September, 1939), who comments on its value when used in combination with phenobarbital. He finds the drug by itself more effective than "Luminal" in controlling epileptic seizures; but although it has practically no hypnotic action, it possesses considerable toxic properties. It should not be used indiscriminately in place of phenobarbital; but as it is not incompatible with this latter anticonvulsant, it forms a useful combination in selected cases. The intellectual status of the patient gave no indication as to prognosis with "Dilantin".

I. FROST (*The Journal of Mental Science*, September, 1939) reports the use of sodium diphenyl hydantoinate in the treatment of twelve certified epileptic patients. All had previously been treated by phenobarbitone of sodium, which was gradually discontinued. The new drug was found to have strikingly favourable effects. Patients became more cheerful and alert. The number of fits was reduced. But the drug is not without toxic effects, a new one here mentioned for the first time being epistaxis. Myoclonic twitchings were also noticed. The drug does not raise the threshold to convulsions induced by "Cardiazol". Where fits appeared to occur at regular intervals it was found possible to exhibit the drug for these periods and then to withdraw it.

The Senile Sex Offender.

JAMES M. HENNINGER (*Mental Hygiene*, July, 1939), in making a study of sex offenders, found that 5% were senile males, that is, men who had begun to show signs of mental deterioration, failure of memory or

the more advanced signs of senile mental aberration. As the span of life becomes lengthened, more senile types are engaging the attention of psychiatrists in both private and institutional work, and there seems to be an increase in the number of senile psychoses. The author states that such sex crimes as indecent assault, rape, exhibitionism and indecent conduct are frequently the early indications of male senility, if not of the onset of a frank senile psychosis. It is seldom that any previous delinquencies of a sexual nature have been found in such cases; and, indeed, it frequently transpires that the offender has been held in the highest regard and may have pursued the loftiest ideals in a lifelong service of respectability. There seems to be no association between the degree or type of mental deterioration and the likelihood of sexual delinquency. Mental deterioration is inevitable and progressive. The outlook in all cases is poor; and the disposal of the sexual offender raises a number of complicated questions which can be adequately answered only by a study of each individual problem. Beyond the question of guilt there is the question of the degree of deterioration and the severity and type of the psychosis. Gaol is unsatisfactory, and the mental hospital may be unnecessary. Adequate care depends upon the extent to which the custodians appreciate their responsibility and the measures they are able to take to meet it.

Pharmacological Shock Therapy and "Metrazol" Convulsive Therapy.

J. R. ROSS AND B. MALZBERG (*The American Journal of Psychiatry*, September, 1939) base a report on 1,757 schizophrenic patients treated by insulin hypoglycæmia and 1,140 patients treated with "Metrazol" ("Cardiazol"). The authors find that the patients responded better to insulin. They believe that "Metrazol", besides being less effective than insulin, may cause more severe complications, including fracture of the spine. They find it effective in selected cases, but believe it to be a dangerous drug. They believe that the prognosis when insulin is used depends largely on the duration of illness before treatment, the type of illness and the personality of the patient.

Familial Lateral Sclerosis.

GEORGE E. PRICE (*The Journal of Nervous and Mental Disease*, July, 1939) reports the occurrence of seven cases of spastic paralysis in four generations of one family. All patients were females; some suffered from pure spastic paraplegia, others from spastic paraplegia in association with ataxia. The author appends a critical review of the literature of familial spastic paralysis and notes the various degenerative findings which have been recorded.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on November 30, 1939, at the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, Dr. G. M. BARRON, the President, in the chair.

Acute Nephritis.

Dr. A. J. COLLINS read a paper entitled "Acute Nephritis" (see page 289).

Dr. A. S. WALKER said that he did not want the difficult task of opening the discussion on acute nephritis, but on behalf of the Section of Medicine he offered very sincere thanks to Dr. Collins for representing them at the meeting and putting forward an able, conservative and comprehensive review of the subject. Dr. Walker said that there was a tendency in certain schools of thought to speak as if the kidney were the only incident in the process. As Dr. Collins had pointed out, there was evidence that acute nephritis was part of a general vascular affection. Dr. Collins had placed due stress on lesions of the kidneys themselves. Referring to hæmorrhagic nephritis, Dr. Walker said that he had regarded it as a variant of focal nephritis, and he did not think the new term necessary. One could not help being impressed with the fact that in focal nephritis there was a disease that had some effect on the glomeruli and caused hæmorrhage. In other cases it seemed to be more widespread in the body, and there was evidence of widespread capillaritis.

Dr. Walker asked Dr. Collins what his experience had been with regard to convulsions in acute nephritis. Although it was always an alarming sign, and usually a serious sign, Dr. Walker had not found it always a fatal sign; he had seen numbers of people have a series of convulsions and make perfectly good recoveries. He thought that there was perhaps a derangement of the vascular system of the brain itself and that the convulsions were not necessarily an earnest of the renal damage. Focal nephritis was usually a more or less benign process. Another point to which Dr. Walker wished to refer was the connexion between infection and nephritis. In a case of focal nephritis associated with infection in the upper part of the respiratory tract, sometimes the amount of blood that appeared in the urine was really striking; it was likely to be regarded as surgical hæmaturia. If the medical attendant delayed until the intensity of the focal process had abated and then removed, say, septic tonsils, blood reappeared in the urine. Dr. Walker said that he remembered a case in which it had been considered doubtful whether the patient should have a general anaesthetic. After much discussion one tonsil was removed, and next morning there was blood in the urine; that abnormality soon subsided. After some delay the second tonsil was removed; the next morning blood reappeared in the urine. Later it disappeared and had never returned. This phenomenon was apparently due to sensitization, for once the kidney was sensitized it was very easy to reproduce the symptoms; in this connexion the occurrence of a certain latent period before the onset of acute nephritis would be recalled. In some cases there did seem to be some connexion between suppuration in the kidney itself and acute nephritis. It had been the custom to distinguish between suppurative and non-suppurative infections of the kidney. Dr. Walker did not think that that distinction could always be maintained. Some years before he had had as patient a little girl with acute pyelonephritis. As the family was in poor circumstances, Dr. Walker had collected a catheter specimen of urine and sent it to the Royal Prince Alfred Hospital with the request that an attempt should be made to culture it. To his surprise he was told later that it contained such splendid casts that it had been used for a demonstration to students. Dr. Walker had previously examined specimens of the

child's urine for red blood cells and casts, and had found none. Since then he had encountered several similar cases. He thought, therefore, that suppuration in the kidney might sometimes be a prelude of acute nephritis. Dr. Walker thought that the subject of acute nephritis was one to which no one could add a great deal, because they were so much in the dark as to the processes going on. He remembered reading the report of a discussion in London on acute nephritis; one of the speakers, in reply to a question, had said: "We all have a feeling that nephritis is connected with a streptococcal infection." Dr. Walker said that the statement was typical of the scientific mind; now their opinion was the same. He had had a case in which focal nephritis followed lymphatic infection in the neck of a man; shortly afterwards the patient's daughter had acute nephritis, and both patients were treated in hospital. Dr. Walker did not suggest an inevitable connexion, but he thought that it was interesting that no organisms were found to be harboured in the throat by the father, while the child was found to harbour streptococci.

Dr. T. DIXON HUGHES thanked Dr. Collins for his interesting paper. Although the toxæmias of pregnancy had been excluded, Dr. Hughes thought that some aspects were relevant; one was the question of the low reserve kidney. It was sometimes very hard to discover why albuminuria occurred early in pregnancy when there was no apparent toxæmic origin. The explanation would appear to be that the patient might have had earlier a mild attack of nephritis not requiring medical attention. Dr. Hughes remembered one patient who showed symptoms of mild nephritis in the first pregnancy, and in the next pregnancy she had acute tonsillitis with hæmaturia; this was apparently an exacerbation of a chronic process. These patients with low reserve or mildly damaged kidneys presented one of the greatest problems in obstetrics. Most belonged to the type characterized by infection not severe enough to require attention, perhaps occurring in childhood. Another striking point was the way different organisms attacked the kidney in different ways. Patients were sometimes admitted following a miscarriage in which the main symptoms were anuria and mild jaundice. The blood urea level was extremely high and kept rising, and very little oedema was present; the temperature frequently was not raised to more than 100° F. These patients frequently had an infection with the gas gangrene bacillus. Although many of these cases terminated fatally, their prognosis was not so bad as those in which hæmoglobin appeared in the urine as an initial symptom prior to the anuria. Dr. Hughes said that he was glad that Dr. Collins had brought forward the fact that the patient might have some protein in the chronic stage. The persistent starvation of these patients was criminal; sometimes they improved vastly and their oedema actually diminished when they were given more protein.

Dr. KEMPSON MADDOX said that he wished to support Dr. Walker in his remarks concerning Dr. Collins's paper; the ground had been completely and ably covered, and there was little more to be said. There were one or two points on which he shared Dr. Collins's difficulty, particularly the occurrence of cardio-vascular changes at the height of an attack of nephritis. It was often difficult to say at first whether the heart or the kidney was responsible for the clinical picture. The urine was often heavily albuminous, with casts and red cells, oedema was present in the face, lungs and elsewhere in the body, and it was difficult to determine whether the kidney or the cardio-vascular system was primarily affected. These patients were usually past middle age, and the beginnings of arterial disease might have contributed to the train of events. The cardiographic changes also were confusing; there was sometimes evidence of grave myocardial involvement; but in one case that had come under his notice these signs had persisted for only forty-eight hours, and then the case revealed itself as one of acute nephritis. Dr. Maddox then referred to ætiology, and particularly to the views expressed as to the weight to be given to the nephrotoxic theory and the capillarotoxic theory. In acute nephritis due to burns, tubular changes were as important

as the glomerular changes. It was held by some authorities that the tubular changes were largely nutritional, due to obstruction of the efferent arteriole. The supporters of the theory of capillary damage, amongst whom was Meakins, had many cogent arguments. Their main points were that capillary damage in acute nephritis was allergic, that the heart, brain and kidney suffered most, and that in some cases evidence of superficial capillary damage could be obtained. Cerebral changes suggested that the capillaries of the brain had become more permeable; but in Dr. Maddox's experience, and from what he had read on the subject, the cause of the widespread cerebral symptoms was an exacerbation of the hypertension.

Referring to Dr. Collins's remarks about the cause of anuria and the use of large amounts of sulphate solutions and chloride solutions, Dr. Maddox could only say that in one case in which he had given an injection of a strong solution of magnesium sulphate the patient's condition rapidly deteriorated and he became unconscious and died. Dr. Maddox thought that such sudden insults to the kidney should be withheld unless the indications were very plain, and this method of treatment should be used only as a desperation measure. With regard to hæmorrhagic nephritis, Dr. Maddox said that he shared Dr. Walker's difficulty in recognizing cases of focal nephritis as such and in distinguishing them from the hæmorrhagic types of acute nephritis. He had been wrong several times in the case of young patients who appeared to have focal nephritis with transient œdema under the eyelids; but the hæmaturia persisted for week after week, and finally the patient passed into the subacute stage. Dr. Maddox said that these cases should not be passed over lightly and foci of infection should not be removed too early. Nothing was to be gained by rapid surgical intervention, and it was a good thing to wait for two months if necessary.

Dr. A. J. GIBSON also thanked Dr. Collins for his paper. He said that he wished to ask one or two questions. He asked Dr. Collins whether he had noticed much difference in the sequelæ of acute nephritis in men and women. Dr. Gibson said that it was very common to get from his pregnant patients who suffered from toxæmia a history suggesting acute nephritis that had never been diagnosed as acute nephritis, associated with acute tonsillitis or scarlet fever, the nephritis having completely subsided; it was only with the added strain of pregnancy that acute toxæmia developed. It used to be thought that patients who had had toxæmia of pregnancy suffered from chronic nephritis as a sequela; but later investigations had shown that in the vast majority of cases chronic nephritis did not develop. Rather were the patients left with a chronic hypertensive condition, which every pregnancy tended to aggravate. Dr. Gibson wanted to know whether Dr. Collins had found hypertension to be equally common in the male, or whether it was the pregnancy that was responsible. He was also interested in the possibility that there might be a familial tendency to acute nephritis. In toxæmia of pregnancy the history was often suggestive that the family as a family was prone to cardio-vascular and renal disease. Dr. Gibson wondered whether this characteristic was common to women or whether it occurred among males as well. The two conditions mentioned by Dr. Walker were often overlooked in women; conditions labelled acute nephritis were often acute pyelonephritis. In this regard he mentioned acute bilateral cortical necrosis; this was fatal in women. However, recently an article had been published by a man who had had patients with symptoms of cortical necrosis associated with severe anæmia. He gave them glucose solution by the intravenous drip method for a long time, followed by small quantities (30 cubic centimetres) of concentrated glucose solution every eight hours. Although they were very anæmic, he withheld blood transfusions and they recovered.

Dr. Collins, in reply, said that in the preparation of his paper he had analysed the various histories of patients suffering from acute nephritis in the Royal Prince Alfred Hospital records, and thought the results of the analysis contributed nothing strikingly new, so he had spared his audience the statistics. But in his search of the records

he had found one of a young patient who had died in uræmia; at the *post mortem* examination it had been found that the subject had not only nephritis of the glomerular type, but also pus in the pelvis of his kidney. Dr. Collins said that this answered Dr. Walker's question about the presence of bacteria in the kidney. He supposed that suppuration here had been the focal source of the nephritis. With regard to convulsions, Dr. Collins said that in children he had regarded them as not particularly serious. He remembered one child who developed acute nephritis after the usual incubation period; the onset was with convulsions and with disturbance of temperature. The convulsions were not particularly serious and were not a symptom of uræmia. Convulsions were a more serious omen when they occurred in adults. With regard to the question of whether hæmorrhagic nephritis was a form of focal nephritis, Dr. Collins said that that was Volhard's idea. He thought that hæmorrhagic nephritis was really a form of focal nephritis, and Dr. Collins thought that that was so in many cases. O'Hare had pointed out that there was a very bad prognosis in many of his cases of hæmorrhagic nephritis. Such cases could not have been focal nephritis, because in focal nephritis there were no constitutional symptoms and uræmia never occurred. Dr. Collins had noticed the recurrence of hæmaturia after the removal of tonsils; but he did not regard it as of much significance. He agreed with Dr. Maddox, however, that tonsillectomy should not be rushed. He also agreed with Dr. Maddox that the chief changes in septic conditions, such as septic burns, were tubular changes, though he had known patients who had the glomerular form of changes after burns. The same might be said of other infections. Septicæmia usually caused changes in the tubules rather than in the glomeruli. Dr. Collins agreed that the injection of sodium sulphate solution was heroic treatment and should not be used unless the anuria had persisted for so long that one feared that the patient would die whatever was done. Dr. Collins had noticed no difference in the sequelæ of acute nephritis in men and those in women. He said that the sequelæ depended entirely on the severity of the attack and not on the sex of the patient. He had noticed a familial tendency to chronic nephritis, but not to acute nephritis; he did not think that there was any such tendency.

Dr. G. M. BARRON, from the chair, thanked Dr. Collins for his interesting paper.

A MEETING of the South Australian Branch of the British Medical Association was held on September 30, 1939, at Naracoorte, Dr. M. ERICHSON, the President, in the chair.

Head Injuries.

Dr. L. C. E. LINDON read a paper entitled: "Some Aspects of the Management of Head Injuries" (see page 299).

Dr. C. E. KING said that first of all he wished to thank Dr. Lindon for his most instructive and informative address. Dr. King was sure that all present had gained knowledge which would be of considerable help to them in their future treatment of patients with head injuries. Dr. King made particular mention of Dr. Lindon's excellent description of a type of head injury which was not mentioned in text-books, subdural hæmatoma, its ætiology and operative treatment.

Dr. King asked for Dr. Lindon's opinion of the future mental state of patients suffering from repeated minor head injuries. In his experience he had attended many jockeys who had had such repeated minor head injuries, and their mentality was definitely affected. Finally, on behalf of the other medical practitioners in the south-east, Dr. King took the opportunity of thanking the British Medical Association officials for having arranged the meeting at Naracoorte, and expressed the hope that it would be the forerunner of future meetings to be held in other towns of the south-east.

VICTORIAN BRANCH NEWS.

THE following information is published at the request of the Council of the Victorian Branch of the British Medical Association for the information of members.

Income Insurance Fund.

THIS TRUST DEED is made the twentieth day of December, 1939, by CRAWFORD HENRY MOLLISON, of 41 Spring Street, Melbourne, RICHARD HERBERT JOSEPH FETHERSTON, of 14 Collins Street, Melbourne, JAMES PERRINS MAJOR, of 12 Collins Street, Melbourne, FRANCIS LETHIEULLIER DAVIES, of 1216 High Street, Malvern, and BERTRAM MILNE SUTHERLAND, of 107 Collins Street, Melbourne, in the State of Victoria, medical practitioners (hereinafter called the Trustees, which expression when hereinafter used shall be deemed to include the Trustees hereof for the time being) WHEREAS it is in the opinion of the Council of the British Medical Association (Victorian Branch) desirable that funds should be raised from the members of the Branch to as far as practicable assist practitioners who may suffer monetary loss as a consequence of undertaking military service or service relating to the prosecution of the war or the widows or dependents of practitioners who may die in consequence of undertaking such service AND WHEREAS the said Council has appointed the Trustees to collect and administer a fund to be applied in rendering such assistance AND WHEREAS the Trustees have invited subscriptions to a fund to be called the B.M.A. Income Insurance Fund AND WHEREAS the Trustees desire to declare the trusts upon which they will stand possessed of and administer such fund NOW THIS DEED WITNESSETH that the Trustees hereby declare that they will stand possessed of all moneys which may come to their hands as contributions or donations for the purposes aforesaid or as income arising from the investment of any such moneys (all of which are together hereinafter referred to as the Fund) UPON TRUST to administer such moneys in accordance with the provisions hereinafter appearing:

(1) DEFINITIONS.

In this deed and in the Rules set out in the Schedule hereto unless the context otherwise requires—

- (a) "The scheme" means the collection of moneys and the investment and disbursement thereof in pursuance of the provisions hereof.
- (b) "Practitioner" means a registered medical practitioner and a member of the British Medical Association (Victorian Branch).
- (c) "The Rules" means the rules set out in the Schedule hereto and any variations in or additions to such rules duly made.
- (d) "Contributing member" means a practitioner who has entered into an agreement under seal with the Trustees in a form approved by them to contribute to the Fund, and who has paid at least one quarterly contribution to the Fund.
- (e) "Absentee member" means a contributing member who for the time being is not carrying on his ordinary practice or professional duties in consequence of having undertaken military service and thereby after taking into account his military pay is suffering a loss of professional income.
- (f) "Military service" means service in the military, naval or air services of the Commonwealth or service under the Government of the Commonwealth or any State in any occupation related to the prosecution of the war.
- (g) "Gross professional income" means all income of a contributing member derived from his practice and includes remuneration from any professional appointments whole time or otherwise and his net share in the earnings of a locum tenens assistant or partner.

(h) "The war" means the present war between Great Britain and Germany, and any continuance thereof with any other power.

(i) "Military pay" means the pay appropriate to the rank of the member concerned including deferred pay with the addition of all allowances for temporary rank or for the support of his wife or children.

(j) Words importing the masculine gender shall include females.

(2) The scheme shall come into operation on a date to be decided by the Trustees but not earlier than the first day of January 1940 and the Rules contained in the Schedule hereto shall apply to the scheme.

(3) The Trustees shall give notice of the date of coming into operation of the scheme to all persons who at the date of such notice have agreed to become contributing members.

(4) So much of the Fund as shall not be immediately required for the current expenses and purposes of the fund shall as soon as practicable be invested by the Trustees in some one or more of the modes of investment authorized by the Statute Law of Victoria for the investment of Trust Funds.

(5) The Trustees shall keep proper registers of the names and addresses of all members distinguishing between those who are contributing or absentee members.

(6) No Trustee shall receive any remuneration for his services but the Trustees may employ such clerical or other assistance as they may consider advisable and the cost of such assistance and all other expenses incidental to the collection and administration of the Fund shall be paid out of the Fund.

(7) Subject to the payment of the expenses referred to in Clause (6) hereof the Fund shall be applied by the Trustees in their discretion in payments in accordance with the Rules to absentee members or their widows or dependents.

(8) If upon the determination of the scheme any balance of the Fund remains unexpended such balance shall be distributed among the contributing members (except those who have received assistance from the Fund) in proportion to their respective total contributions to the Fund.

(9) The scheme shall be determined and the balance, if any, of the Fund shall be distributed at such date being not later than one year from the termination of the war as the Trustees may decide or at the expiration of five years from the date of commencement of its operation whichever shall be the earlier.

(10) The Trustees shall have the following powers:

- (a) To alter or rescind any of the rules or make any additional rule or rules provided that the Trustees shall not be entitled to alter or rescind any rule relating to the rate of contributions of contributing members.
- (b) To decline any application for membership without giving reasons for so doing.
- (c) In any individual case to reduce the rate of contribution of any member for either the period of his membership or for any less period or periods or to decide as to what shall be regarded as his gross professional income for any specified year or years or admit a practitioner as a contributing member without requiring full or any compliance with Rule No. 4.
- (d) To prescribe the form of covenant under seal to be entered into by contributing members and if thought fit to alter such prescribed form.
- (e) To apply the Fund in payments to practitioners who have entered into military service prior to the 31st day of December 1939 without previously applying for membership.

(11) The Council of the British Medical Association (Victorian Branch) may by resolution remove any Trustee from office and appoint any new trustee or trustees in

place of any of them who shall die, be removed from office, retire, or be unable or unwilling to act, provided that the number of Trustees shall not at any time exceed five or be less than three.

(12) The quorum for a meeting of the Trustees shall be three and the decision of a majority of the Trustees present at a meeting of which reasonable notice shall have been given shall bind the minority.

(13) The Trustees shall make such arrangements as they think fit for notices of their meetings and the conduct of the proceedings thereat.

(14) Any notice sent by post by prepaid letter to any Trustee or member addressed to him at his last known address shall be deemed to have been served at the time when in the ordinary course of post it should reach such address.

(15) The Trustees shall treat as strictly confidential all information obtained by or furnished to them with relation to the income or other business affairs of any contributing or absentee member or to the payments made to any absentee member and shall not communicate any such information to any person except to persons employed to assist them in the collection and administration of the Fund.

IN WITNESS WHEREOF the Trustees have hereto set their respective hands and seals the day and year first before written.

SCHEDULE.

Rules.

(1) Any practitioner shall be eligible to become a contributing member upon applying for membership and entering into a covenant under seal with the Trustees in a form prescribed by them to contribute during the continuance of the scheme a percentage of his gross professional income at the rates prescribed by these Rules.

(2) Each contributing member shall pay to the Trustees the contributions assessed upon his gross professional annual income as provided by Rule 3 at the undermentioned rates:

Upon such income up to £2,000—2½%.

Upon any excess of such income above £2,000 up to £3,500—3½%.

Upon any excess of such income above £3,500 up to
£5,000—5%.

Upon any excess of such income above £5,000—10%.

and such contributions shall be paid by four equal quarterly payments for each year, the first of such payments to be made on the first day of February, 1940.

(3) The gross professional income in respect of which the contribution of a contributing member shall be assessed shall be for the period from the date of commencement of the scheme to the 31st day of December, 1940, his gross professional income as shown by his income tax return for the year ending 30th June, 1939, and for the year ending 31st December in each subsequent year his gross professional income as shown by his income tax return for the year ending 30th June of each preceding year.

(4) No practitioner who was not a member at the date of commencement of the scheme, and no practitioner who has transferred his practice to Victoria since the date of commencement of the scheme, shall thereafter become a member without payment of such total amount computed under the provisions of these Rules as he would have been required to contribute if he had been practising in Victoria and had been a member at such date, but the provisions of this Rule may be waived or modified in individual cases by the Trustees under the provisions of 10 (c) of the Trust Deed.

(5) No practitioner who has graduated since the date of commencement of the scheme shall be entitled to become a member until after the expiration of one year from the date of his graduation.

(6) A contributing member who becomes an absentee member shall cease to be liable to contribute to the fund

for so long as he remains an absentee member, and may apply to the Trustees for assistance from the fund.

(7) An absentee member seeking assistance from the fund shall furnish to the Trustees all information that they may require with regard to his military pay and his income from other sources, and the decision of the Trustees as to whether assistance shall be granted to him and the amount of such assistance shall be final.

(8) In no case shall assistance to an absentee member be greater than an amount sufficient with the member's military pay during the period of such assistance to make the income of the member equal to £900 per annum during such period.

Signed, Sealed and Delivered } Crawford H. Mollison.
by the said Crawford }
Henry Mollison in the }
presence of Edgar H. Ward. }
Seal

Signed, Sealed and Delivered } R. H. J. Fetherston.
by the said Richard Herbert }
Joseph Fetherston in the }
presence of Edgar H. Ward. }
Seal

Signed, Sealed and Delivered } J. P. Major.
by the said James Perrins }
Major in the Presence of }
Edgar H. Ward. } Seal

Signed, Sealed and Delivered } F. L. Davies.
by the said Francis }
Lethieullier Davies in the }
presence of Edgar H. Ward. } Seal

Signed, Sealed and Delivered } B. M. Sutherland.
by the said Bertram Milne }
Sutherland in the presence }
of Edgar H. Ward. }
Seal

THIS DEED OF COVENANT is made the
day
of 1939, Between
of in the State of Victoria (hereinafter
called the Practitioner) and CRAWFORD HENRY MOLLISON,
RICHARD HERBERT JOSEPH FETHERSTON, JAMES PERRINS
MAJOR, FRANCIS LETHIEULLIER DAVIES and BERTRAM MILN
SUTHERLAND the Trustees of a Trust Deed dated the
Twentieth day of December, 1939, providing for the estab-
lishment of a fund for the assistance of Medical Prac-
titioners who may suffer monetary loss as a consequence
of undertaking military service (or their widows or
dependents), all of whom are hereinafter referred to as
"the Trustees", which expression shall include the Trustees
for the time being of the said Trust Deed WHEREAS the
Practitioner has read and approved a printed copy of the
said Trust Deed and the Rules set out as a schedule thereto
and desires to become a contributing member as defined in
the said Trust Deed and to participate in the benefits of
the scheme referred to therein in the event of his under-
taking military service NOW THIS DEED WITNESSETH that
the Practitioner HEREBY COVENANTS with the Trustees that
he will from the date of commencement of the said
scheme until such date being not later than one year
from the termination of the war between Great Britain
and Germany and any continuance thereof with any other
Power as the Trustees may decide or the expiration of five
years from the date of commencement of the scheme which-
ever shall be the earlier pay to the Trustees at the times
provided by the said Rules contributions to the said fund
assessed upon his gross professional income at the rates
and in the manner prescribed by the Rules and that he
will be bound by and observe the provisions of the said
Deed and Rules and any variations or additions to such
Rules duly made IN WITNESS whereof the Practitioner has
hereunto set his hand and seal the day and year first
before written.

Signed, Sealed and Delivered
by the said Practitioner in
the presence of

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on July 12, 1939, at the Children's Hospital, Melbourne, Dr. D. O. BROWN, the President, in the chair.

Foreign Body in the Lung.

DR. J. G. WHITAKER showed a boy, aged seven years, who had a foreign body in the lung. He stated that, as his interest in the case was only indirect and as Dr. Hennessy had been very interested in the boy, he would ask Dr. Hennessy to give the history.

DR. RAYMOND HENNESSY said that the boy had been admitted to hospital on April 4, 1939, and when he had first seen him his temperature was 103° F. and a pulmonary abscess was present. The child had had hæmoptysis on two occasions just prior to his admission to hospital and had lost a considerable amount of blood. In the skiagrams it was evident that an upholstering tack was located in the right lung. By bronchoscopic investigation Dr. Hennessy had found that the right main bronchus was full of pus, and though the visibility was bad, he had been able to identify the presence of granulation tissue and had seen the stricture, but not the foreign body; the tack had been there at least two years. Two days later, when the child had recovered from the examination, it could be seen from skiagrams that the tack had been disturbed into a secondary bronchus and had fallen back into an abscess cavity. Dr. Hennessy had taken that view because the tack could not have advanced so far through intact lung tissue. In another week he had undertaken another bronchoscopic examination in more favourable circumstances. The boy's general condition was better, the pus was cleaner and visibility was excellent. Dr. Hennessy had been able to inspect the orifices of all the distant bronchi, but had not been able to see the tack. He had made a further attempt, on May 18, without success, and had then introduced lipiodol. The presence of the iodized oil had enabled him to obtain skiagrams showing that the foreign body was in a posterior bronchus very near the diaphragm; it seemed that the abscess cavity had failed to fill or, alternatively, that no abscess cavity was present.

Dr. Hennessy mentioned the following points of interest: (i) that the foreign body had moved considerably between the second and third bronchoscopic examination, though he had certainly not touched it; (ii) that the improvement in the boy's general condition was due to the fact that the lung had become "uncorked"; and (iii) that lobectomy was indicated. It was certainly beyond his resources to get the tack out, and he had handed the patient over to Dr. Whitaker for surgical treatment.

DR. ROBERT SOUTHEY said that he had known a barley grass fragment to work its way out of a lung, and on analogy the tack might come to the surface.

DR. COLIN MACDONALD expressed the opinion that the tack was not in a pulmonary abscess but in a bronchiole, and that the radiographic appearances were those of "drowned lung" with some bronchiectasis. The child's general condition would be satisfactory unless he again exhibited toxic symptoms. Dr. Macdonald added that a biplane fluoroscope was required at the hospital to make it possible for bronchoscopists to be able to remove foreign bodies such as the one under discussion. Though the instrument might cost £3,000, it should be obtained when the hospital was rebuilt in the near future. It would be used also in the setting of fractures.

DR. W. KENT HUGHES discussed the surgical procedures which could be adopted as the bronchoscopist was unable to get the foreign body out. He related an experience in which he had been unable to remove a tooth which was tightly wedged in a bronchus; an abscess had formed after

two or three weeks and he had removed the tooth by posterior bronchotomy. He added that the patient still had a "blow hole" in his back twenty or thirty years later. The only other foreign body that he had left in a chest was in the pathological museum at the Children's Hospital; it was a tuft of grass almost two inches in length; eventually it had been coughed out of the chest. Dr. Kent Hughes expressed the opinion that lobectomy was too severe an operation to be undertaken at that stage.

DR. D. M. EMBELTON said that Dr. Keith Hallam, in private conversation with him, had suggested that the foreign body should be left alone. Dr. Embelton considered, however, that they had evidence that something was happening around the foreign body; the boy had had a severe hæmoptysis and one that was not so severe. He recalled a case in which he had been associated with Dr. Kent Hughes. A halfpenny had found its way from the œsophagus into the posterior mediastinal space, and the result had not been a happy one. In the present case Dr. Hennessy had improved the drainage, and Dr. Embelton suggested that he might be persuaded to continue to carry out suction aspiration at intervals, the child being postured regularly on a suitable frame, in the hope that the tack would ultimately come into a position where it was accessible.

Dr. Whitaker said that he had left the question of the performance of lobectomy open until the weather was warmer. In the absence of lung destruction, and as the child was in such good health, he was satisfied that they could afford to "wait and see".

Unusual Movements of the Abdominal Wall.

Dr. Whitaker also showed a boy, aged three years, with constant rhythmic movements of the abdominal wall, and asked for a discussion of the possible pathology of the phenomenon. The child was reported to have been well until March, 1939, when the rolling movement had first been noticed. There was a little scoliosis without an underlying bony lesion; some weakness of the left *gluteus medius* muscle was present, and the Trendelenburg sign was equivocal. There appeared to be some gross nervous lesion, perhaps in the neighbourhood of the *substantia nigra*, but there was no direct evidence of poliomyelitis or of hemiplegia. The child had been able to walk at one time, but not latterly. Dr. Whitaker said that the patient was under his care at the Orthopedic Branch of the Children's Hospital at Frankston, and he had had reliable reports that the movements of the abdominal wall did not cease even when the child was asleep. The effect of general anaesthesia had not been tested. Dr. Whitaker added that at times similar movements of the feet of a minor character had been reported.

DR. H. BOYD GRAHAM made the suggestion that the phenomenon might be post-encephalitic. He had come across patients with myoclonus during active *encephalitis lethargica* and believed that it might be followed by athetotic movements; but he had not previously seen them affecting the abdominal wall. He drew attention to the fact that in the present case the back muscles were also involved.

Pulmonary Secondary Deposits after Embryoma of the Testis.

DR. J. W. GRIEVE showed skiagrams prepared in the case of a boy, aged seven years; secondary deposits of newgrowth in the lungs were visible. The skiagrams had been made six months after the removal, by Dr. D. O. Brown, of an embryoma of the child's right testis. Dr. Grieve said that on December 20, 1938, the child had been hit on the scrotum by a tennis ball and had wanted to lie about for three days afterwards. Dr. Grieve had examined him on January 27, 1939, on account of tenderness over the right lower portion of the abdomen, and had found that the right testis was replaced by a lump the size of a hen's egg. Operation had followed, and at that time the skiagrams of the chest had been of normal appearance. Dr. Grieve had seen the patient again recently in consultation; it was thought that the child had left-sided

lobar pneumonia. The temperature was elevated and the chest had been explored with a needle for the presence of pus. In the skiagrams that had been prepared the appearances were strongly suggestive of the presence of huge secondary malignant deposits. The child had wasted and his illness was running a persistent and consistent mildly febrile course.

Dr. D. O. BROWN said that prior to operation the differential diagnosis had rested between organized hæmatocele and malignant disease of the testis. He had carried out the standard radical operation, tying the cord high up as a preliminary to removal of the testis, and he had tried to avoid spilling and dissemination by judicious packing and careful changing of the instruments. The tumour belonged to the teratomatous group. Dr. Brown referred those interested in the prognosis to Chevassu's statistics, which had been quoted by Professor Harold Dew in his book on malignant disease of the testicle. The standard of cure adopted by Chevassu was freedom from symptoms for four years. Most of the deaths took place within two years of the operation, and the ultimate mortality rate was 81%.

Encysted Empyema.

Dr. HOWARD WILLIAMS showed a baby, aged sixteen months, suffering from encysted empyema. Some three months earlier the baby had had scarlet fever followed by right-sided basal pneumonia, and, four weeks after the scarlet fever rash had appeared, the baby had had measles and a recurrence of pneumonia. Shortly afterwards a small amount of pus had been obtained through a needle introduced in the eighth right intercostal space in the mid-scapular line. The condition had persisted, and Dr. Williams demonstrated the appearances from a series of right and left lateral skiagrams. More recently, thick non-offensive pus had been obtained through the fourth left interspace in the mid-axillary line. It amounted only to approximately 15 cubic centimetres of pus. A growth of *Staphylococcus aureus* had resulted from culture of the pus. The baby's progress was satisfactory.

Dr. Williams said that after looking through the histories of all the patients who had been during the past four years in the wards of the Children's Hospital suffering from empyema he had been unable to find any record of an encysted empyema apart from those along the interlobar fissure. He had satisfied himself, therefore, that the patient he had shown was suffering from a very uncommon condition and appeared to have an encysted empyema on the lateral wall of the chest. He had wondered whether it should be regarded as a chronic pulmonary abscess, and had been much impressed with the improvement that had followed conservative surgical treatment, consisting of simple repeated aspiration.

Dr. REGINALD WEBSTER said that he thought that the fact that the condition had cleared up with aspiration tended to support the diagnosis of empyema rather than that of lung abscess.

Dr. GUY SPRINGTHORPE drew attention to apparent displacement of the heart as indicated in one of the skiagrams shown by Dr. Williams.

Tuberculous Infection of Infants and Children.

Dr. ROBERT SOUTHBY showed three infants suffering from tuberculous infection of the lungs as an introduction to a discussion of tuberculous infection of the lungs in infants and children.

One of them had been shown previously at the meeting of the society held in May, 1939. At that time the child had survived the tuberculous infection for six months, and in the interval he had had a severe attack of measles, during which he had become very ill; the complication appeared to be peritonitic, with vomiting and abdominal distension lasting for ten days. The baby's general condition had improved, but he was not gaining weight satisfactorily and had enlargement of the lymphatic glands in the neck, axillæ and groins.

Another infant, aged nine months, was under-weight and had not thrived during the previous month after an attack of measles. The father of the baby was suffering

from pulmonary tuberculosis and had been discharged from a sanatorium to his home, where he had been living with the baby for six months.

The last infant shown by Dr. Southby was a female, aged two years and ten months, who had been discovered on routine examination to be undersized; she had an irregularly elevated temperature and a positive reaction to the Mantoux test. The examination had been carried out because a younger brother had been admitted to the hospital suffering from gastro-enteritis, and after two weeks in hospital he had contracted tuberculous meningitis, which proved fatal. The father of these babies had had pleurisy two years before the meeting and had been in a sanatorium suffering from pulmonary tuberculosis. Dr. Southby remarked that with proper care the third infant he had shown might be able to resist the infection, or her illness might be expected to run a course parallel with that of the first infant shown.

Dr. Southby added that he had shown the three babies at the meeting as a forcible demonstration to the members that there was a tremendous risk in having infants or young children in the same house as an adult infected with tuberculosis. That form of contact was the obvious cause of infection in each instance, and from the skiagrams of the chest of each of the babies, he was able to demonstrate signs which, taken in relation with the clinical evidence, left no doubt that each child was suffering from tuberculous infection of the lung. It was an anomaly that patients suffering from scarlet fever or diphtheria were hustled away from their homes for treatment at the Infectious Diseases Hospital and kept there until they were declared free from the risk of infecting others, while patients with open tuberculosis could stay in their homes or be returned to their homes from sanatoria in a state in which they were a serious danger to susceptible contacts. Dr. Southby considered that it would be an economically sound principle to have institutions in which the children could be held pending the recovery or death of the older sufferers. In existing circumstances the wage earner or mother continued to work as long as possible, though ill, and that state of affairs was prejudicial to all concerned.

Dr. REGINALD WEBSTER, in opening the discussion, said that much that he could say as appropriate to the patients and specimens before the meeting he had already said at comparatively recent meetings of the society.

The utility of gastric lavage and subsection of the product to bacteriological examination directed towards the detection of *Bacillus tuberculosis* by cultural and animal inoculation methods, he had discussed at the April meeting of the society. His remarks had been reported in THE MEDICAL JOURNAL OF AUSTRALIA of July 1, 1939. In that report also were recorded some comments he had made on tuberculous bacilluria, a question which could well arise again in the consideration of specimens which he proposed to show. These had been recently secured from a girl, in whose case the clinical and autopsy findings had been those of the "adult" type of pulmonary tuberculosis.

It would have been noted that all three children presented by Dr. Southby (in two of whom gastric lavage had furnished a culture of *Bacillus tuberculosis*) had been exposed to infection by intimate contact with persons suffering from active pulmonary tuberculosis. The deplorable regularity with which such contact could be traced in the case of children dying of tuberculous meningitis, or presenting themselves at the out-patient department with tuberculous joints, was at the present moment a matter of serious concern to the honorary medical staff of the hospital. It was commonly stated that the protection of infants and young children from short-range infection with tubercle bacilli was not so much a medical as a social and economic problem—that the medical aspects were well understood. But were they? Were the medical aspects well understood by those who regarded several consecutive failures to find tubercle bacilli in smear preparations of sputum as a sufficiently reliable index of non-infectivity? It was disquieting to reflect that many patients were discharged from sanatoria, to return to

their homes and mix with young children, on such a standard of release. It had been computed by H. J. Corper that unless the numbers of tubercle bacilli present in sputum approximated 100,000 per cubic centimetre, the organisms could not be detected by microscopic search.

Dr. Webster said that the application of cultural methods to the sputum of phthisical patients had illuminated the loopholes in the film method. Shrewsbury and Barton, of the University of Birmingham, had shown that of 135 samples of sputum in which tubercle bacilli could not be detected microscopically, 29 (21.4%) were found to be tuberculous by cultural examination. Similar findings had been recorded by C. A. Green from the bacteriological department of the University of Edinburgh. Green reported that in the examination of 2,796 specimens of sputum for the presence of tubercle bacilli, the positive findings by cultivation exceeded those attending the microscopic examination of films by nearly one-third (32.4%). More striking perhaps were the figures of Corper and Cohn, who had published results which showed that of 100 samples of sputum in the examination of which negative results with respect to the presence of tubercle bacilli were consistently obtained in the monthly examinations of film preparations over periods ranging from four months to two years, one-half yielded a positive finding by the application of a single cultural test.

The significance of these findings as a compelling indication for the adoption of culture as a routine measure in the examination of samples of sputum under suspicion of being tuberculous was obvious. Attention had been called to the situation by Dr. M. J. Holmes in a paper read at the plenary meeting of the Fifth Session of the Australasian Medical Congress (British Medical Association), and Dr. Holmes's advocacy of routine cultural examinations of sputum was endorsed in the leading article of the issue of January 7, 1939, of THE MEDICAL JOURNAL OF AUSTRALIA.

With reference to Dr. Southby's third patient, whose baby brother had died of tuberculous meningitis and whose father was a subject of pulmonary tuberculosis, Dr. Webster said that he considered it most probable that the underlying lesion was the Ghon focus. The tissue reaction which resulted in the Ghon focus was generally conceded to be provoked characteristically by primary infection. Such a focus might be situated anywhere in either lung; more commonly than otherwise it abutted on the pleural surface, and subpleural lymphatic spread of infection was often evidenced by a chain of minute tubercles leading to the nearest lymphatic glands. The primary granuloma known as the Ghon focus, and by some regarded as a tuberculous chancre, had no special predilection for the apical regions of upper or lower lobes, as had the adult type of lesion or the lesion of reinfection. Involvement of the immediately related lymphatic glands, manifested by active caseous disease, was an essential feature of the lesion of primary infection. Subclinical tuberculosis of the tonsil with associated and clinically manifest tuberculous cervical adenitis was just as good an example of the tissue reaction to primary tuberculous infection as was the generally accepted prototype, the Ghon focus.

Dr. Webster then showed specimens which he had recently secured at autopsy of a girl, aged eleven years, who, after a period of six weeks spent in the Children's Hospital, had died of pulmonary tuberculosis. Shortly after the girl's admission to hospital he had cultivated *Bacillus tuberculosis* from her sputum. Notable features in her illness, both of rare occurrence in childhood, were spontaneous pneumothorax and aphonia, subsequently determined as referable to tuberculous laryngitis. This girl had also displayed an extreme degree of tuberculous ulceration affecting both small and large intestines, of which her symptomatology had given no indication.

In the specimens which Dr. Webster showed, the following features were seen: apical cavitation in the right lung with bronchopneumonic spread of tuberculous infection throughout both lungs, tuberculous laryngitis, indicated by a ragged and pitted appearance of the epiglottis and an ulcer immediately below the right vocal

cord, and renal tuberculosis, as evidenced by minute, macroscopically visible cortical lesions.

Dr. Webster said that the apical pulmonary lesion in this girl provided an example of the adult type of lesion, or lesion of reinfection, which differed from the primary lesion of childhood in two important particulars. In the first place the reaction was much more violent and more destructive of tissue, and in the second place, unless resistance was overwhelmed, the lesion tended to remain localized and implication of the neighbouring lymphatic glands was not macroscopically apparent.

Dr. Webster included in his remarks a reference to the Koch phenomenon as observed in guinea-pigs inoculated with tubercle bacilli, and the explanation by this well-established observation of the differing tissue reactions of human beings infected for the first time in childhood and of those reinfected in later life.

In commenting upon the renal lesions exhibited by this girl, Dr. Webster said that their presence should occasion no surprise in association with pulmonary tuberculosis. On a former occasion he had drawn attention to the work of E. M. Medlar, who found that of 30 patients who had died of pulmonary tuberculosis no less than 22 displayed renal lesions, although none had given any symptomatic indication of their existence. Dr. Webster indicated that in his own experience of the cultivation of *Bacillus tuberculosis* from the urine of subjects of pulmonary tuberculosis, he had examined the urine of 36 individuals and had recovered tubercle bacilli in nine instances. Six of the patients thus giving a positive cultural result had manifested no symptoms; one had suffered from haematuria; and concerning the other three he had no information as yet relative to the presence or absence of symptoms.

Dr. Webster concluded by drawing attention to a group of specimens illustrative of tuberculous pulmonary lesions in childhood, which he had placed on view as appropriate to the occasion.

DR. COLIN MACDONALD discussed the subject from the radiological aspect. He said that the work of Anton Ghon, the Prague pathologist, had been of such help to X ray interpretation that radiologists remembered his name with gratitude. Dr. Macdonald felt that its value could not be properly assessed unless an historical background was provided. If he interpreted the history of the pathogenesis of pulmonary tuberculosis aright, and here, as usual, he sat at the feet of his colleague, Dr. Reginald Webster, prior to about 1909 the inhalation theory of the primary pulmonary infection was widely held; but in 1910 Calmette and others contested this so effectively that for a period it was believed that the bacillus entered through the mucous membrane of the alimentary tract, secondarily infecting, by lymphatic spread, the bronchial glands and thence, lastly, the lung parenchyma. In 1912, just at the time when the alimentary view was gaining many adherents, Ghon's work was published. Many years before, Cohnheim had enunciated the law that the portal of entrance of the tubercle bacillus was indicated by the lymph glands draining the area, and later another pathologist named Ranke termed the well-known triad of changes which took place the "primary complex"; the triad was: (i) the primary tuberculous focus at the place where the bacilli lodged, (ii) the tuberculous lymphangitis spreading from the primary focus to the lymph glands draining the area, and (iii) inflammation and a tendency to caseation of these glands. Ghon showed that the primary lesion from which the bronchial glands were infected was actually in the lung parenchyma, and often so small as to be overlooked. The radiologist was able to demonstrate this focus on account of the radiographic contrast provided by the surrounding air-containing lung. It might lie anywhere in the lung fields: most frequently it lay in the right lower lobe, and it was generally the size of a grain of rice. The radiologist saw it in the healed or quiescent stage, and thus it was dense and well defined, with a clear-cut periphery. The hilar glands draining this area frequently showed signs of calcification. Some caution had to be observed, however, in making the statement that a Ghon focus was actually present, because pulmonary vessels seen end on might simulate it. At the Children's Hospital, Carlton,

it was seen only infrequently; at Frankston an investigation undertaken by Dr. Douglas Galbraith showed a Ghon focus in the lungs in many cases of osseous tuberculosis. Dr. Macdonald therefore had a wholesome respect for a Ghon focus large enough to be demonstrated radiographically, for it seemed a manifestation of some gravity. He felt too that it was wise, in spite of the dense and sharply defined shadow, to speak of it as more likely to be a quiescent than a healed lesion.

Dr. Macdonald regarded the X ray diagnosis of tuberculous hilar lymph glands as unsatisfactory, particularly if they were only moderately enlarged and not associated with an active lesion in the lung. Not only was it difficult to say when these hilar glands were enlarged at all (in other words, when the hilar shadows were outside the limits of normality), but there were so many causes other than tuberculosis (for example, the widely prevalent broncho-sinusitis) which might cause their enlargement. Calcification in these glands meant, of course, only a healed process. It told nothing of an active glandular inflammation, whether tuberculous or otherwise. Calcification itself had to be interpreted with caution, because here again large pulmonary vessels seen end on might simulate it, and Dr. Macdonald thought that calcification in hilar glands had in the past been too readily diagnosed from the skiagrams. On the other hand, he was reluctant to accept a macroscopic report that the calcification suggested by X rays was not present. Staining of microscopic sections seemed to him to be necessary, for one would think that calcium deposit in fine suspension in soft tissues would be more easily detected by radiography than by the naked eye or the scalpel. Furthermore, as showing the limitations of radiography in revealing hilar adenomegaly, it had to be mentioned that the glands situated around the tracheal bifurcation were hidden by the heart shadow and even lateral views were virtually of no help. When, however, the paratracheal nodes were enlarged by tuberculosis, as they were most often in infants (and sometimes considerably so), the skiagram might be helpful; but a large number of conditions entered into the radiological differential diagnosis, and a definite diagnosis on a single film lay amidst the quicksands. Dr. Macdonald sometimes wondered whether the clinical diagnosis of enlargement of hilar lymph glands was any less bankrupt than the radiological diagnosis. He remembered when in general practice fighting many a rearguard action with d'Espine's sign, Heubner's sign, Petrusky's sign and Koranyi's sign. Dr. Macdonald thought that Koranyi must have achieved a discrimination of auditory pitch amongst the Magyars of Hungary which he could not achieve in the town of Warracknabeal, lying on the Yarrilambiack Creek. Certain things, so precept ran, had to be heard to be believed. He suggested that d'Espine held to the converse of this proposition, namely, that certain things had to be believed before they could be heard.

The adult type of tuberculosis in childhood seemed to be more common than was believed three decades earlier, when he was a resident medical officer at the Children's Hospital. It was seen in its early stages in the apical region or as a fluffy deposit in the axillary half of the infraclavicular region. This latter was what the radiologist termed Assmann's focus, its results being the same as in the adult, either extension with caseation and cavitation or retrogression with fibrosis, or these two elements of the kinetics of tuberculosis proceeding side by side. Assmann's focus had, of course, to be differentiated from influenza pneumonia.

Miliary tuberculosis might be present and yet might escape radiographic detection in its early stage. Only when the miliary deposits had attained a certain size were they demonstrable. They had to be differentiated from diffusely scattered bronchopneumonic areas, both tuberculous and non-tuberculous. The characteristic picture of miliary tuberculosis was as if fine sago had been thrown uniformly into the lung fields. The minute areas were comparatively well defined, suggesting that the infiltrative rather than the exudative type of consolidation was present.

The radiologist was emboldened to suggest that a bronchopneumonic deposit was of tuberculous origin when

it involved the apical and infraclavicular regions, and, of course, when it showed signs of breaking down or of cavitation. But in this condition, as in all radiographic chest examinations, views taken at intervals of some weeks were important so that the chronology of the changes might be determined. Just as a clinician often had to see a patient on more than one occasion before hazarding a diagnosis, so a radiologist had to see more than one skiagram.

Concerning the epituberculosis syndrome, which might be defined as a benign or persistent (though ultimately resolving) pneumonic consolidation in children, Dr. Macdonald said that the radiologist was interested in this condition because it was his series of films which played probably the most important part in the diagnosis. Owing to its benignity, the patient did not reach the autopsy room as a result of the epituberculosis *per se*. It was described as persistent, because the consolidation was shown on the X ray films for many weeks; benign, because the child was not ill, in spite of an extensive pneumonic consolidation; and resolving, because eventually it was absorbed, little or no evidence of its presence being left, except perhaps a little nodule like a Ghon tubercle or pleural thickening along the interlobar fissure. Its happy end-result was different from what would be expected in tuberculous consolidation—no cavitation, no fibrosis of any moment. Was this consolidation of tuberculous origin? It was natural for a generation born to a tradition of pessimism in the prognosis of extensive pulmonary tuberculosis, confronted with the clinical facts of recovery, to dispute the specificity of this regressive lesion. Dr. Macdonald considered that the most illuminating approach to an understanding of this condition was the historical route. In 1895 the French physician Grancher wrote of exudates in a tuberculous lung which sometimes cleared up completely. To this he gave the name "spleno-pneumonia"; but it was not until 1920 and 1921 that the Germans Eliasberg and Neuland reported the occurrence, and the complete resolution six to eighteen months later, of lobar exudates in one or more lobes in children who gave a strongly positive response to the tuberculin test. Some of these infants had tuberculous lesions in glands and bones; but in all cases the pulmonary consolidation came as a surprise because of the child's good condition. They called these lesions "epituberculosis", regarding them as non-specific, non-tuberculous inflammations occurring around a tuberculous focus, for example, a Ghon focus. In 1923 Langer reported the case of a child who had a consolidation in the left upper lobe, which completely disappeared but reappeared after the injection of 0.1 milligramme of tuberculin. The reappearance cleared up within fourteen days. Langer regarded the condition as an allergic phenomenon, a non-tuberculous inflammation occurring round a tuberculous focus, in fact around a Ghon focus—a conception which makes epituberculosis strictly comparable with the redness, inflammation and oedema which surround the injected tuberculin in a positive Mantoux reaction. There was, however, this difference: the lung reaction produced by tuberculin and the area of redness around the Mantoux reaction soon disappeared, whereas the shadow cast by epituberculosis remained for months or even years. The transient character of the inflammatory changes in a positive Mantoux reaction was suggested to be due to the small amount of antigen used. In 1923 also, Gorter, of Leyden, was able, by means of a needle inserted in a consolidated area in so-called epituberculous cases, to demonstrate actual tubercle bacilli in the withdrawn material; and this was confirmed later by Parsons, professor of paediatrics in the University of Birmingham. The punctures were made in such a way as to avoid the possibility of a needle's having entered a Ghon focus. Gorter and Parsons therefore believed that epituberculosis was a true tuberculous process; and if so, it looked as though some modification was necessary in the generally accepted view that tuberculous pneumonia in children was necessarily of grave import, and that, even in the most fortunate cases, severe lung damage, such as caseation, cavitation and fibrosis, must follow. The radiologist had to differentiate this persisting consolidation from atelectasis. In atelectasis the radio-

graphic appearances differed from epituberculosis in that the atelectatic area was smaller (or retracted) at the hilum, the heart and mediastinum were dislocated, and the diaphragm was elevated on the affected side. The shadow of epituberculosis usually occurred in an area not affected by atelectasis, the central area of the lung. In epituberculosis the base of the shadow was usually at the hilum, its apex at the periphery. The shadow of epituberculosis cleared slowly from the periphery, a form of clearing which would not occur in atelectasis. Dr. Macdonald had not yet seen an example of the epituberculosis syndrome in the X ray department of the Children's Hospital, Melbourne.

Dr. H. BOYD GRAHAM thanked Dr Southby for bringing such an important matter so prominently before the members of the society. Dr. Boyd Graham was able to confirm from his experience at the hospital and elsewhere that the protection of children from tuberculous infection in Victoria was inadequate and unsatisfactory. The measures adopted were not so effective as those in operation in other countries. He had discussed the matter with Dr. Bell Ferguson and with Dr. H. Maxwell James, and it appeared that though those officials were keenly alive to the situation and were doing notable work in the direction desired, they required more legal powers and much more money at their disposal before satisfactory results could be expected. It would appear that the present occasion was opportune for the members of the Melbourne Paediatric Society to express their corporate opinion on the subject. That opinion could be expected to carry weight with the governmental authorities. It was difficult to outline at short notice the best procedure to recommend; but it was obvious that the existing state of affairs was intolerable. One of the main problems for decision was whether the infants and children should be removed from their homes for their protection or whether the infected person should be removed from the home and kept away until declared non-infectious after long observation for absence of activity of the lesions and after modern cultural methods of examination had been applied to the discharges for the presence or absence of tubercle bacilli. There were many economic considerations of importance, such as a subsidy to replace lost earnings, improvement of housing conditions and dietary. It seemed probable that some combination of those suggestions would be needed in a satisfactory practical scheme.

Dr. GUY SPRINGTHORPE spoke of the American preventoria to which children of all ages from known tuberculous families were sent. They were associated with centralization methods, by means of which the patient's state of health was followed from childhood to the adult age. Dr. Springthorpe said that he would like to see the Victorian authorities urged to provide homes analogous to the preventoria, which were very numerous throughout the United States of America and Canada. The patients shown that night by Dr. Southby represented clinical conditions which, though by no means rare, were not commonly encountered in practice. Dr. Springthorpe asked for more information about epituberculosis, which he admitted he had thought of as a figment of the imagination rather than as a reality; perhaps it would be simpler to call the condition frank tuberculosis of the lung in children.

Dr. KEITH HALLAM referred to the description of the presence of paratracheal and parabronchial glandular shadows in skiagrams. He said that they could not be visualized unless the enlargement was really massive, on account of the many other structures contributing to the appearances, even in the lateral films. With reference to epituberculosis, Dr. Hallam said that radiologists confined the term to a haziness seen in lung fields, which might persist for years. His idea of the sequence of events was that the haziness was due to a perifocal transudate, which indicated the lighting up of a quiescent lesion as an allergic reaction or as a frank tuberculous pneumonic process. They would expect an allergic reaction to vanish within a few days or weeks; but the pneumonic process, after a slow course, would probably persist as a large quiescent fibrous nodule in the lung.

Dr. H. DOUGLAS STEPHENS said that the suggestions made by previous speakers should not be allowed to be pigeon-holed. While it was true that the officials at the Tuberculosis Bureau were thoroughly aware of the existing state of affairs, he would like to initiate a definite course of action, and proposed the following motion:

That the matter be referred to the Committee of the Melbourne Paediatric Society with a direction that a plan be formed for the better preventive care of tuberculous contacts and that the authorities be asked to cooperate in the matter of putting the plan into effect.

Dr. W. KENT HUGHES remarked that he would prefer to see the patients rather than the children removed from their homes.

Dr. D. M. EMBELTON said that he would like to support Dr. Boyd Graham and Dr. Douglas Stephens, and he formally seconded Dr. Stephens's motion. He also wished to offer a suggestion. After thanking Dr. Webster and Dr. Macdonald for their reviews of the specialist phases of the subject, Dr. Embelton said that it was refreshing to hear that the radiologists had to some extent disowned their capacity to diagnose tuberculosis. He had been present at a meeting of the Victorian Branch of the British Medical Association some two years earlier, when Dr. C. H. Fitts, Dr. S. O. Cowen and Dr. S. V. Sewell had discussed the early diagnosis of chronic chest conditions. Dr. Embelton had left the meeting feeling that the clinician had a small part to play. The suggestion he wished to make was that, as there was a select committee of the State Legislative Assembly in being for the purpose of inquiring into child endowment, evidence should be collected, crystallized and presented to that select committee concerning the fate of the contacts with tuberculous patients. Dr. Embelton referred to Huxley's observation that when a person began work on a problem he never stayed where he started or got where he expected. There was not any doubt that freedom from tuberculosis was dependent on an ascending scale of resistance, which could be reached only by the raising of the standard of living by means of improvement of the housing and feeding of the exposed children as well as by other obvious environmental improvements.

Dr. F. K. NORRIS said that he was glad to support the suggestion that Dr. Boyd Graham had made, which had been incorporated in the motion before them. Tuberculosis was a preventible disease; but those present had to ask themselves what they were doing to prevent it. A sense of value was necessary apart from money values. In any social project great assistance was gained by association with the authorities at the Trades Hall. Dr. Norris felt certain that the question was largely a matter of publicity and that a campaign had to be planned. They must create the public demand for some constructive action to be taken by the governmental authorities.

Dr. W. McL. SMITHERS referred to the rheumatic infections as a problem having many points in common with the tuberculosis problem under discussion. The children affected by rheumatism and chorea probably outnumbered tuberculous children by more than four to one. Dr. Smithers also said that he had taken a particular interest in the subject of hilar gland tuberculosis. While abroad he had examined many of the 200 children at Highwood with gross enlargement of hilar glands. There the children were put to bed and cared for, and they recovered. Dr. Smithers had also seen some children who were placed in the epituberculosis category. The shadow usually took from eight to twelve weeks to clear, and was regarded as an evidence of allergy, though it was difficult to decide on the stage of infection reached when the phenomenon was manifested. At that institution there were also some sixteen children who were having treatment by means of artificial pneumothorax, the youngest being only two and a half years of age.

Dr. D. O. BROWN, from the chair, said that the question was of vast importance and that an investigation covering many hundreds of cases was being conducted at the hospital. He then put to the meeting the motion which

had been proposed by Dr. Stephens and seconded by Dr. Embelton. It was carried without dissent.

Dr. Southby, in reply, said that if an adult suffering from tuberculosis was sent to a sanatorium he should be kept there till he was free from infection. From a practical point of view, the officials at the Health Department and Tuberculosis Bureau were not able to keep the patients at the sanatoria until they were cured. They could only aim at making the treatment educative, to teach the patients how to look after themselves and how to avoid infecting others. Even if the authorities could keep them longer, the patients were very reluctant to stay. Dr. Southby also commented on what Dr. Springthorpe had said about the American preventoria. Many of the members had seen the literature and the reports; but their protests had as yet been ineffective. In conclusion, Dr. Southby drew attention to Dr. Webster's point that there was a risk of infection from the urine and faeces of tuberculous patients.

THE MEDICAL DEFENCE SOCIETY OF QUEENSLAND.

THE annual meeting of the Medical Defence Society of Queensland was held at B.M.A. House, 225, Wickham Terrace, Brisbane, on February 1, 1940, DR. ALEX. H. MARKS, the President, in the chair.

Annual Report and Financial Statement.

The annual report of the Council and the financial statement for the year ended 31st December, 1939, were presented and adopted on the motion of Dr. Alex. H. Marks, seconded by Dr. A. G. Anderson.

The Council has pleasure in presenting the following report of the Society for the year ended December 31, 1939.

Membership.—The total membership of the Society is 385, exclusive of 11 members whose subscription for the year 1939 has not been paid. Our gains have been: new members 30, members reinstated 7, making a total of 37. Our losses have been: resignations 3, left the State 4, deceased 5, unfinancial 11, making a total of 23. As last year's membership was 371, a total gain of 14 members has been made during the year.

It is with regret that we record the death of the following members: Dr. Mark O'Brien, Dr. J. Morris Roe, Dr. J. J. Delaney, of Brisbane, Dr. A. J. Spencer Roberts and Dr. Aeneas J. McDonnell, both of Toowoomba.

Office Bearers and Council Elected for 1939.—President: Dr. Alex. H. Marks; Vice-President: Dr. S. F. McDonald; Honorary Secretary: Dr. Neville G. Sutton; Honorary Treasurer: Dr. R. G. Quinn; Councillors: Dr. A. G. Anderson, Dr. Gavin H. Cameron, Dr. G. W. Macartney, Dr. Horace Johnson, Dr. H. S. Waters, Dr. Kenneth Wilson, Dr. L. P. Winterbotham.

The retiring councillors were Dr. A. G. Anderson, Dr. Neville G. Sutton and Dr. H. S. Waters, all of whom were reelected.

Medico-Legal.—During the year three cases were submitted to the Council. Two cases were not suitable for the Society to take up, and the third was referred to the solicitors of the Society and the member was advised of the action to be taken.

Proposed Indemnity Insurance.—As a result of a resolution passed at the last annual meeting, the Council reconsidered the possibility of making an arrangement for insurance against damages on behalf of members of the Society. Inquiries were made from the medical defence organizations in the other States, and a quotation was obtained from an insurance company. When all the necessary information was in hand a circular explaining the whole position was sent to all members of the Society, with a questionnaire attached. For the guidance of the Council, members were asked to express their opinion on four alternative proposals which were submitted to them:

(1) continue as at present; (2) pay £2 2s. *per annum*, for which the Society will endeavour to arrange cover up to £2,000 (legal expenses and damages); (3) pay £3 3s. *per annum*, to cover legal expenses and damages up to a maximum of £10,000, the Society to take out an indemnity insurance policy to cover all members; (4) abide by the majority decision on any of the foregoing questions.

The circular was sent out on the 14th October, and members were asked to return their replies to the questionnaire not later than the 9th December, 1939.

The result has been disappointing, as up to date only about 26% of members have replied. It is proposed to send out a further circular in the hope that a more decisive opinion will be obtained. Any alteration in the subscription must have the sanction of a general meeting of the Society, so that a decision on the question will be made at the annual meeting.

Finance.—The total assets of the Society are £5,126 15s. 10d. It will be noted that the income from investments *et cetera* amounted to £191 12s. 4d. and the sum of £241 5s. 3d. was received from entrance fees and subscriptions. The total income for the year was £432 17s. 7d. The total expenditure was £57 15s. 7d. Surplus of income over expenditure for the year was £375 2s., which is a very satisfactory position. Our legal expenses this year were only £1 11s. 6d.

Election of Office Bearers.

Dr. S. F. McDonald, Dr. Kenneth Wilson and Dr. Gavin H. Cameron, who had retired in conformity with the by-laws of the Society, were unanimously reelected members of the Council.

It was reported that Dr. H. S. Waters had tendered his resignation as a member of the Council, and that Dr. G. P. Dixon had been appointed by the Council to fill the vacancy.

On the motion of Dr. M. Graham Sutton, seconded by Dr. R. B. Charlton, it was resolved that Messrs. R. G. Groom and Company, chartered accountants (Australia) be reelected as auditors for the ensuing year.

Proposed Indemnity Insurance.

It was reported that only 57% of members had returned replies to the questionnaire regarding proposed indemnity insurance. As this result was not considered decisive enough for action to be taken on behalf of the whole of the members of the Society, it was decided to obtain further information from other sources to ascertain whether an indemnity cover could be arranged for those members who desired it.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 28, of February 15, 1940.

PERMANENT NAVAL FORCES OF THE COMMONWEALTH (SEA-GOING FORCES).

Appointment.—Trevor Alexander McLean is appointed Surgeon Lieutenant (for Short Service), dated 7th September, 1939.

Honorary Physician.—The appointment of Surgeon Captain William James Carr, C.B.E., as Honorary Physician to His Excellency the Governor-General is renewed for a period of one year from 30th January, 1940.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Termination of Appointment.—The appointment of Surgeon Lieutenant Trevor Alexander McLean is terminated, dated 6th September, 1939.

THE SECOND AUSTRALIAN IMPERIAL FORCE.

Australian Army Medical Corps.

To be Captain—Norman Franklyn Freemantle.

AUSTRALIAN MILITARY FORCES.

NORTHERN COMMAND.

Command Headquarters: Infantry.

31st Battalion.—Major (temporarily) H. M. Saxby is transferred to the Reserve of Officers (A.A.M.C.) and to be Major, 22nd January, 1940.

First Military District.

Australian Army Medical Corps.

Captain H. W. Anderson is appointed from the Reserve of Officers (A.A.M.C.), 12th October, 1939. Lieutenant-Colonel R. E. Douglas is transferred to the Reserve of Officers (A.A.M.C.), 17th January, 1940.

Australian Army Medical Corps Reserve.

To be Honorary Lieutenant—John George Brooks, 17th January, 1940. The resignation of Honorary Major E. O. Marks of his commission is accepted, 19th December, 1939.

EASTERN COMMAND.

Second Military District.

Australian Army Medical Corps.

Captains G. F. Hill and T. Y. Nelson are appointed from the Reserve of Officers (A.A.M.C.), 12th October, 1939; Captain (provisionally) A. R. Hazelton is borne supernumerary to establishment pending absorption, 10th January, 1940.

Australian Army Medical Corps Reserve.

To be Honorary Captains—John Kenneth Harbison and Walter Terence Joseph Harris 5th January, 1940, and 8th January, 1940, respectively.

SOUTHERN COMMAND.

Third Military District.

Australian Army Medical Corps.

To be Majors (temporarily)—Captains H. E. Pearce, R. G. Worcester, D. Zacharin, S. Plowman, R. N. Howard, J. E. Sewell, J. F. Akeroyd, I. M. King-Scott, W. F. Bowen, G. N. Morris, J. R. Heath and R. H. Stevens, 22nd January, 1940. To be Captains (provisionally) supernumerary to establishment pending absorption—Kennedy Byron Burnside, 18th December, 1939; Andrew Noel Fraser and Harold Crowcombe Stone, 25th December, 1939, and 23rd January, 1940, respectively. Captain I. J. Wood is appointed from the Reserve of Officers (A.A.M.C.), 12th October, 1939.

Fourth Military District.

Australian Army Medical Corps.

Lieutenant-Colonel H. C. Nott and Captain F. R. Hone are appointed from the Reserve of Officers (A.A.M.C.), 12th October, 1939; Honorary Captain G. T. Gibson is appointed from the Reserve of Officers (A.A.M.C.) and to be Captain (provisionally), 12th October, 1939.

WESTERN COMMAND.

Fifth Military District.

Australian Army Medical Corps.

Captain A. L. Johnston is appointed from the Reserve of Officers (A.A.M.C.), 12th October, 1939.

Australian Army Medical Corps Reserve.

To be Honorary Captain—John Frederick Francis Drew, 6th January, 1940.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The following Flight Lieutenants are granted the temporary rank of Squadron Leader, with effect from 1st September, 1939: T. C. Anthony and W. D. L. Farrar.

Flight Lieutenant H. J. Melville is granted the temporary rank of Squadron Leader, with effect from 1st January, 1940.

Citizen Air Force.

Medical Branch.

Flight Lieutenant P. J. Benjamin is granted the temporary rank of Squadron Leader, with effect from 1st October, 1939. (Ex. Min. No. 9—Approved 14th February, 1940.)

Francis Sherlock Parle, M.B., B.S., is granted a commission on probation as Flight Lieutenant, with effect from 22nd January, 1940. John Alward Game, M.B., B.S., is granted a commission on probation as Flight Lieutenant, with effect from 30th January, 1940. Roger Claire Angove, M.B., B.S., is granted a commission on probation as Flight Lieutenant, with effect from 5th February, 1940.—(Ex. Min. No. 10—Approved 14th February, 1940.)

Correspondence.

NOMENCLATURE OF BLOOD GROUPS.

THE following letter on the nomenclature of blood groups was received by Dr. J. H. L. Cumpston, Director-General of Health, Commonwealth Department of Health, from Dr. N. M. Goodman. Dr. Cumpston has forwarded it to this journal for publication.

SIR: As the British member of the Health Committee of the League of Nations, I have been asked to draw your attention to the following resolution passed at the meeting of this Committee on November 20-25, 1939:

The Health Committee believes it to be its duty once more to draw the attention of all concerned to the recommendation adopted by the Permanent Commission on Biological Standardisation in 1928 concerning the nomenclature to be adopted in the designation of blood groups. It is of opinion that, especially in present circumstances, the use of a uniform nomenclature will obviate mistakes which might entail serious consequences.

In 1928 the Permanent Commission on Biological Standardisation reported that:

The Commission learns with satisfaction that, on the initiative of the Health Organization of the League of Nations, the nomenclature proposed by von Dungern and Hirszfeld for the classification of blood groups has been generally accepted, and recommends that this nomenclature shall be adopted for international use, as follows:

O A B AB

To facilitate the change from the nomenclature hitherto employed, the following is suggested:

Jansky O(I) A(II) B(III) AB(IV)

Moss O(IV) A(II) B(III) AB(I)

The Commission recommends the adoption of the following method of designating test sera:

Test serum A (anti-B),

Test serum B (anti-A).

Test serum A (anti-B) should be placed in containers of white glass, test serum B (anti-A) in containers of brown glass.

The Commission having learned that in certain countries this nomenclature was not yet in current use, emphasized the importance of achieving uniformity in the matter. The Commission believes that this object might be attained

(a) if each institute which supplies standard sera used solely this nomenclature;

(b) if the editors of scientific journals (medical, legal, etc.) insisted upon the exclusive use of

this nomenclature in all the works they may be called upon to publish. It is particularly desirable that all the more important weekly medical journals should also conform to this rule.

The attention of the Health Committee had been drawn to the question by the Danish member, who stated that authoritative British medical journals had recently published articles in which the old nomenclature had been used.

Yours faithfully,

(Sgd.) NEVILLE M. GOODMAN, M.D.

Ministry of Health,
Whitehall, S.W.1,
January 9, 1940.

ALTERNATIVE TO WAR.

SIR: Your readers must agree with you that "we need to become better men and women". Good men, however, did not prevent the American Civil War, nor the Boer War, nor the Great War, nor the present war; indeed they fought in them because they had no alternative to war. They knew no better. "My people are destroyed for lack of knowledge", as Hosea pointed out. It is not enough to desire to be good; one must have the technique to practise goodness. Are our social tools in good order? What of our methods of exchange, of our monetary system, built as it is on the urge of profit, of exploitation one of another? What of unemployment, malnutrition, and indebtedness of the primary producer? What of embargoes and quotas and prohibitive tariffs?

Were we to substitute the goal of a fair exchange for the search for profits, our society would undergo an extraordinary practical and spiritual change—mercy and truth would meet together, righteousness and peace kiss each other. Instead of wage slavery, brotherhood throughout the world! Instead of war, peace and adventure throughout the nations! Our present methods lead to dictatorship and regimentation, such as threatened us under the national insurance acts.

Australians must seek and find the right way of life for individuals, communities and nations; free from the bodily fears and dangers of the Europeans, we can give attention to such long-range problems. Ends are conditioned by means. To achieve our aims, the practice of goodness as individuals and as a nation, we must choose the right path—good intentions are not sufficient—proverbially the road to hell is paved with good intentions.

I myself believe that only a practical and spiritual change in our monetary system, in our system of exchange, can enable us to achieve a community goodness; and that all reformers should demand a thoroughgoing investigation by royal commission into our financial system and the theory on which it is based, and that no suggestions should be regarded as outside the terms of reference.

Yours, etc.,

MARY C. DE GARIS.

Geelong,

February 20, 1940.

AUSTRALIAN ARMY MEDICAL CORPS COMFORTS FUND (WAR DRESSINGS BRANCH): AN APPEAL.

SIR: I should be most grateful if you would allow me space in your journal for the purpose of bringing to the notice of the medical profession a war organization which should be of interest to it. This is the War Dressings Auxiliary of the Australian Army Medical Corps Comforts Fund, and its aims are to make and supply surgical dressings, operating theatre stock, special bandages, rolled bandages and splint pads (and plaster of Paris bandages in limited quantities at present) to general and base hospitals, field ambulances, casualty dressing stations *et cetera*, of

the Australian Imperial Force, both here and abroad, the dressings to be supplied sterilized to those units which have no facilities for sterilization.

To date we have made the following types of articles: dressings pads 15, 12, 8, 6, 4 inches square, single and double eye bandages and pads, gauze drains from $\frac{1}{4}$ to 4 inches wide, gauze swabs and wool swabs, many-tailed, T and triangular bandages, binders, rolled bandages from 1 to 6 inches wide, small and large operation sponges, special absorbent and protective pads of all sizes, and splint pads and plaster of Paris bandages as required.

This work is being done by groups of medical women, doctors' wives, ex-army and other nurses and friends, at headquarters in Sydney and at branches in Mosman, Neutral Bay, Ryde, Manly, Roseville, Canterbury-Bankstown, and Moruya, whilst several other country centres are commencing shortly.

Assistance, financial or otherwise, will be most welcome, and donations of the following will be very gratefully received: unbleached calico (of both medium and cheap quality), surgical gauze and wool, butter muslin (plain and stiff), old household linen of every kind, for example, sheets, quilts, curtains, nets, table linen, pillow cases, towels, boilable cotton shirts, pyjamas and dresses, medium and large tins with sealable lids, and wooden boxes (50, 90 and 112 pound tea chests being the most useful size).

If medical men would bring this to the notice of their womenfolk I am sure that some otherwise useless household linen could be found for us, and by applying to headquarters for officially stamped labels, directions for obtaining free railway carriage of these parcels from country centres could be given.

We shall welcome suggestions as to any other type of dressings *et cetera* which we may be able to make.

Any inquiries may be made to the War Dressings Auxiliary, Sixth Floor, Hosking House, Hosking Place, Castlereagh Street, Sydney, or to myself at the Radium Department, Sydney Hospital, Macquarie Street, Sydney.

Yours, etc.,

SYLVIA D. BRAY.

President.

18, Laycock Street,
Neutral Bay,
Sydney.

February 22, 1940.

Congresses.

THE INTERNATIONAL CONGRESS OF PÆDIATRICS.

The American officers of the International Congress of Pædiatrics have decided that the international situation is such at the present time that it seems advisable to postpone to an indefinite date the Fifth International Congress of Pædiatrics, which was scheduled to be held in Boston, Massachusetts, United States of America, on September 3, 4 and 5, 1940.

Books Received.

PATHOLOGICAL HISTOLOGY, by R. F. Ogilvie, M.D., F.R.C.P., with a foreword by A. M. Drennan, M.D., F.R.C.P.; 1940. Edinburgh: E. and S. Livingstone. Demy 8vo, pp. 342, with 220 photomicrographs in colour by T. C. Todds, F.R.P.S., F.I.B.P. Price: 27s. 6d. net.

ILLUSTRATIONS OF BANDAGING AND FIRST-AID, by L. Oakes, S.R.N., D.N.; 1940. Edinburgh: E. and S. Livingstone. Demy 8vo, pp. 255, with 290 illustrations. Price: 6s. net.

THE LOUSE: AN ACCOUNT OF THE LICE WHICH INFEST MAN, THEIR MEDICAL IMPORTANCE AND CONTROL, by P. A. Buxton, M.A., M.R.C.S., L.R.C.P., D.T.M. and H.; 1939. London: Edward Arnold and Company. Demy 8vo, pp. 124, with illustrations. Price: 7s. 6d. net.

RECENT ADVANCES IN NEUROLOGY, by W. R. Brain, D.M., F.R.C.P.; Fourth Edition; 1940. London: J. and A. Churchill Limited. Demy 8vo, pp. 373, with illustrations. Price: 15s. net.

THE MECHANISM OF THE HUMAN VOICE, by R. Curry, M.A., Ph.D., with a foreword by D. Guthrie, M.D., F.R.C.S., F.R.S.; 1940. London: J. and A. Churchill Limited. Demy 8vo, pp. 214, with illustrations. Price: 10s. 6d. net.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Carroll, Edward George, M.B., B.S., 1939 (Univ. Sydney), Central Court, 1, Central Street, Naremburn.
Uebel, Ronald Christian, M.B., B.S., 1937 (Univ. Sydney), 19, Underwood Street, Corrimal.

Diary for the Month.

- MAR. 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 6.—Victorian Branch, B.M.A.: Branch.
MAR. 6.—Western Australian Branch, B.M.A.: Council.
MAR. 7.—South Australian Branch, B.M.A.: Council.
MAR. 8.—Queensland Branch B.M.A.: Council.
MAR. 12.—Tasmanian Branch, B.M.A.: Branch.
MAR. 12.—New South Wales Branch, B.M.A.: Ethics Committee; Executive and Finance Committee.
MAR. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 20.—Western Australian Branch, B.M.A.: Branch.
MAR. 26.—New South Wales Branch, B.M.A.: Council (Quarterly).
MAR. 27.—Victorian Branch, B.M.A.: Council.
MAR. 28.—New South Wales Branch, B.M.A.: Annual Meeting.
MAR. 28.—South Australian Branch, B.M.A.: Branch.
MAR. 29.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. A. Rose-Innes has been appointed Honorary Anaesthetist to the Liverpool State Hospital and Home, New South Wales, for a period of three years.

Professor J. B. Cleland and Dr. C. Duguid have been appointed Members of the Aborigines Protection Board of South Australia.

Dr. T. Godlee has been appointed a Government Medical Officer in accordance with the provisions of the *Mine Workers' Relief Act*, 1932, of Western Australia.

Dr. R. E. Magarey has been appointed a Member of the Advisory Committee of the Royal Adelaide Hospital, Adelaide, South Australia.

Dr. E. L. Gault and Dr. Z. Schwartz have been appointed Members of the Opticians Registration Board, pursuant to the provisions of the *Opticians Registration Act*, 1935, of Victoria.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi-xix.

ADELAIDE CHILDREN'S HOSPITAL, ADELAIDE, SOUTH AUSTRALIA: Honorary Clinical Assistants.
McKINLAY HOSPITALS BOARD, JULIA CREEK, QUEENSLAND: Medical Officer.
STATE PUBLIC SERVICE, QUEENSLAND: Assistant Medical Superintendent.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Associated Medical Services Limited. All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Federated Mutual Medical Benefit Society. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Prosperpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.

Editorial Notices.

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